WILLINGNESS TO SCREEN FOR CERVICAL CANCER AND THE DETERMINANTS AMONG PRIMARY HEALTH CARE WORKERS IN IBADAN NORTH LOCAL GOVERNMENT AREA, NIGERIA

BY

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DEDICATION

This research work is dedicated to the Almighty God and to my parents Mr. and Mrs. Oresegun who were there for me all through the course of this programme.

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ABSTRACT

Cervical cancer is the fourth most common cancer in women, with an estimated 528,000 new cases occurring globally. Cervical cancer screening has therefore been established as an effective instrument in early detection for cervical cancer. Health workers are often times looked upon as "role models" in health related issues such as the need for uptake of cervical cancer screening services. Their attitude to and practice relating to such issues might positively or negatively influence the decision made by the community members. This study therefore aimed to investigate the willingness to screen for cervical cancer and the determinants among primary health care workers in Ibadan North Local Government Area (INLG), Nigeria.

This was a cross-sectional study which enrolled all 313 available and consenting female health workers at primary health care centers and private-owned health facilities in Ibadan North Local Government. Instrument used was a structured, pretested, self-administered questionnaire. Questionnaire inquired information on knowledge, utilization, and willingness to screen for cervical cancer. Data were reported using descriptive statistics, chi-square test and logistic regression analysis with significance at $p \leq 0.05$.

The mean age of the respondents was 33 ± 10 years. More than half of the respondents were married (55.3%) and were nurses (55%). Most of the respondents (89.8%) had a poor knowledge about cervical cancer. Less than one-third of the respondents (25.9%) and (20.4%) had done Pap smear and Visual inspection with acetic acid respectively. Also, only 15.7% of the respondents had done cervical cytology and (13.4%) had done HPV test. Reasons given by respondents for non utilization of cervical cancer screening include; not at risk of cervical cancer (29.4%), lack of awareness of the tests (22.4%), lack of awareness of where the screening can be done (16%), lack of time for the screening (15.7%), and financial constraint (14.4%). Those who were primiparous were 70% less likely to be willing to screen for cervical cancer relative to those who were nulliparous (OR=0.30, 95% CI = 0.13-0.71) and those who were grandmultiparous were 78% less likely to be willing to screen for cervical cancer relative to those who were nulliparous (OR=0.22, 95% CI = 0.07- 0.66). In addition, nurses/midwives were about 3 times more likely to be willing to screen for cervical cancer relative to doctors (OR= 2.82, 95% CI = 1.25-6.38).

The level of knowledge of primary health care workers on cervical cancer screening methods and risk factors associated with cervical cancer was relatively low. Utilization of these screening methods was also low. A high percentage of the respondents were willing to screen for cervical cancer. It is therefore recommended that policies that encourage health workers to know and utilize cervical cancer screening methods should be introduced and education on cervical cancer and its awareness should to be properly disseminated so that the information delivered is complete.

Keywords: Cervical Cancer, Screening, Willingness, Health Workers.

Word Count: 473

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS

CC	Cervical Cytology
CCS	Cervical cancer screening
CIN	Cervical Intraepithelial Neoplasia
CIS	Carcinoma In Situ
CT	Computerized Tomography
DES	Diethylstilbestrol
FIGO	International Federation of Gynecology and Obstetrics
HPV	Human Papillomavirus
HSIL	High-grade Squamous Intraepithelial Lesion
LEEP	Loop Electrical Excision Procedure
LSIL	Low-grade Squamous Intraepithelial Lesion
LVSI	Lymphovascular Space Invasion
MRI	Magnetic Resonance Imaging
PET	Positron Emission Tomography
VIA	Visual Inspection with Acetic acid
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background

Cervical cancer is the abnormal growth of cell in the cervix. Globally, the burden of cervical cancer is unevenly distributed throughout the world, with developing countries accounting for over 80% of all new cases (WHO, 2011). This is attributed to inadequate access to effective screening which results in to less recognition of the disease during its early stages and higher chances of it developing to advanced stages with poor prospects of treatment (WHO, 2015). Indeed, over 80% of cancers in sub-Saharan Africa are detected in their late stages. In 2012, cervical cancer was the fourth most common cancer in women, with an estimated 528,000 new cases occurring globally (WHO, 2013). In Nigeria, it is the second most common female cancer, with an age-standardized incidence rate of 34.5 per 100,000 and incidence/mortality ratio of 0.6 (Ferlay, et al. 2012). Each year approximately, 10,000 women develop cervical cancer, and about 8,000 women die from cervical cancer in Nigeria (Airede, et al. 2008).

The incidence of cervical cancer in developed countries has declined significantly in recent decades due to the implementation of population-wide, cytology-based screening programmes (WHO, 2013) and the systematic use of the Papanicolaou (Pap) smear whereas, the high burden of cervical cancer in developing countries is due both to a high prevalence of Human Papillomavirus (HPV) infection and the lack of effective cervical cancer screening programmes. In cases where effective screening programs are available, poor knowledge and negative health seeking behavior of the populace have led to poor utilization of such services (Sankaranarayanan, et al; 2001). Cervical cancer is preventable and often curable if the right interventions are made available to those who are at risk or develop cervical cancer. Studies show that preventive strategies to reduce cervical cancer incidence should focus on preventing risk factors. Some of the human factors that have been shown to increase the likelihood of HPV exposure and subsequent development of cervical cancer include: young age at first intercourse, high parity, and multiple sexual partners (Kachroo & Etzel, 2009).

There are several barriers to the uptake of cervical cancer screening in Low-middle income countries (LMIC); however, few studies have evaluated some of these barriers. These barriers

include low levels of knowledge of cervical cancer, limited awareness of prevention and early detection methods, fear of stigma associated with cancer diagnosis, concerns about spousal disapproval of screening, and concerns about violations of religious and cultural obligations of modesty during screening procedures (Lyimo & Beran, 2012).

In many developing countries, cervical cancer screenings are poorly accessible, the public still has limited knowledge about cervical cancer, and thus, women are less willing to undergo screenings. Educational levels and misconceptions might also contribute to the low screening attendance (Polit, et al. 2012). Lack of knowledge of cancer screening exercise may be a reflection of general poor health education in the country. Therefore, comprehensive health education programmes are more likely to be beneficial than disease-specific programmes in tackling this problem.

Screening for early detection and treatment is a cornerstone of secondary prevention for cervical cancer. Early diagnosis and treatment of cervical pre-cancerous lesions prevents up to 80 % of cervical cancers in high resource countries where cervical cancer screening is routine (Sankaranarayanan et al., 2001). Although the effectiveness of the Pap smear in reducing cervical cancer incidence and mortality has already been demonstrated in many developed countries (Anttila et al., 1999), there is a wide disparity in rates of screening for cervical cancer in developing countries with the average screening coverage rate in developed countries at 63% compared to 19% in developing countries (Gakidou et al, 2008). In the developing world, women at highest risk for developing cervical cancer are among the least likely to be screened (Gakidou et al, 2008). A WHO report on cervical cancer screening in sub-Saharan Africa noted that while this region was the most affected by cervical cancer, it has access to less than 5% of the global resources for cervical cancer prevention (WHO, 2002). .

It has been reported by Awodele et al. (2011), that nurses at Lagos University Teaching Hospital (LUTH) had good knowledge of cervical cancer but limited understanding of the types of cervical cancer screening techniques and poor disposition towards undergoing cervical cancer screening. Moreover, according to a study conducted by Ahmed et al. (2013) in Zaria, even though their knowledge of symptoms of cervical cancer was fair, their attitude towards cervical cancer screening was poor (19.6%).

However in contrast to the observations above, it was discovered that there is a positive attitude towards the preventive measures for cancer of the cervix by Asuzu, et al. (2011). Therefore, the disposition of people towards cervical cancer screening varies.

1.2. Problem Statement

Cervical cancer screening (CCS) has been established as an effective instrument in early detection as well as treatment for cervical cancer. Yet there is a continuous increase in the number of death of women attributed to cervical cancer, which could have been prevented given the new available technologies. Women in other areas of life who had lesser knowledge about health issues look up to female health workers for positive health behaviors such as participating in the uptake of cervical cancer screening (CCS). As a result, female health workers have strong influence on women and thus are role models in health issues. However, a study among nurses in Lagos revealed that sixty percent of the health providers (nurses) had not screened for cervical cancer even though they understood that Pap smear could be used to detect precancerous stage of cervical cancer (Awodele, et al. 2011).

Also, a study done at Ibadan, Nigeria, designed at finding out the level of knowledge of female health workers about cervical cancer and the level of utilization of preventive measures showed that knowledge about the condition was high among doctors, inadequate among nurses and poor among hospital maids. It also showed 93.2% of respondents had never had Pap smears performed. The poor utilization of the cervical screening test was independent of respondent's profession, marital status or hospital (Ayinde& Omigbodun, 2003).

Moreover, a study among nurses in Nnamdi Azikwe University Teaching Hospital, Nnewi, Nigeria on awareness of cervical cancer screening services, results showed that 87% were aware of the existence of cervical cancer screening services but only 5.7% had ever been screened for cervical cancer (Udigwe, 2006). Therefore, it evident that there seem to be a problem of uptake of CCS among the health workers resulting in high incidence, mortality and poor treatment outcome of cervical cancer and might negatively influence the decision made by the community members.

1.3. Justification

Many women in developing countries were not aware of cervical cancer as research in Uganda has also, shown a poor awareness of this disease among women (Mutyaba, et al. 2007). Evidence has shown that, utilization of cervical cancer screening for the prevention of the disease is poor in Nigeria (Arulogun, et al., 2012).

According to Ayinde and Omigbodun, 2003, risk factors for cancer of the cervix abound even among health workers in Ibadan and adequate knowledge about the condition is lacking. Also, the Pap smear, one of the known effective preventive measures, was found to be unpopular among the majority of these workers.

Health workers especially nurses are often times looked upon as "role models" in health related issues. They play a major role in enlightening the public on the availability and need for cervical cancer screening services. They are informed individuals who are expected to have more information and knowledge about several health related issues and also act as role models in uptake of preventive services but studies have documented otherwise. Their attitude to and practice relating to such issues might positively or negatively influence the decision made by the community members

According to Gharoro & Ikeanyi 2006, while there was a positive correlation between Pap test awareness and utilization among female health workers in a tertiary health institution, screening uptake was very poor due to a combination of inappropriate beliefs, misapprehension, and deficient knowledge. Thus, it appears there is a high level of awareness about cervical cancer screening services and low uptake of these services by health workers. It is uncertain whether the health workers are not aware of the benefits of early screening or the consequences of late presentation of cervical cancer.

This present study therefore intends to investigate the willingness to screen for cervical cancer and the determinants among primary health care workers in Ibadan North Local Government Area, Nigeria as they are important health personnel that are suppose to educate women on the need for cervical cancer screening.

1.4 Research Questions

1. What is the knowledge of primary health care workers on cervical cancer screening methods and the risk factors associated with cervical cancer?

2. How often is the utilization of each of the cervical cancer screening methods among primary health care workers in Ibadan North LGA?

3. What are the determinants of utilization of cervical cancer screening services among primary health care workers in Ibadan North Local Government?

4. What is the level of willingness and associated factors to screen for cervical cancer among primary health care workers?

1.5 Broad Objectives

To investigate the willingness to screen for cervical cancer and the determinants among primary health care workers in Ibadan North Local Government Area, Nigeria.

1.6 Specific Objective

1 To assess the knowledge of primary health care workers on cervical cancer screening methods and the risk factors associated with cervical cancer.

2 To assess the utilization of cervical cancer screening methods among primary health care workers in Ibadan North LGA.

3 To investigate the determinants of utilization of cervical cancer screening services among primary health care workers in Ibadan North LGA.

4 To determine the willingness and associated factors to screen for cervical cancer among primary health care workers in Ibadan North LGA.

CHAPTER TWO

LITERATURE REVIEW

2.1 General Background

Cervical cancer is a cancer arising from the cervix (National Cancer Institute 2014). It is due to the abnormal growth of cells that have theability to invade or spread to other parts of the body (*NCI.* 2014). Early on, typically no symptoms are seen. Later symptomsmay include abnormal vaginal bleeding, pelvic pain, or pain during sexual intercourse (*NCI*, 2014). While bleeding after sex may not be serious, it may also indicate the presence of cervical cancer (Tamey, et al. (2014). Human papillomavirus (HPV) infection appears to be involved in the development of more than 90% of cases (Kufe & Donald (2009). Most people who have had HPV infections, however, do not develop cervical cancer. Other risk factors include smoking, a weak immune system, birth control pills, starting sex at a young age, and having manysexual partners, but these are less important (NCI, 2014). Cervical cancer typically develops from precancerous changes over 10 to 20 years (WHO, 2014). About 90% of cervical cancer cases are squamous cell carcinomas, 10% are adenocarcinoma, and a small number are other types (NCI, 2014). Diagnosis is typically by cervical screening followed by a biopsy. Medical imaging is then done to determine whether or not the cancer has spread (NCI, 2014). HPV vaccines protect against between two and seven high-risk strains of this family of viruses and may prevent up to 90% of cervical cancers (Tran, et al. 2014). As a risk of cancer still exists, guidelines recommend continuing regular Pap smears (NCI, 2011). Other methods of prevention include: having few or no sexual partners and the use of condoms (*National Cancer Institute* 2014). Cervical cancer screening using the Pap smear or acetic acid can identify precancerous changes which when treated can prevent the development of cancer (WHO, 2014). Treatment of cervical cancer may consist of some combination of surgery, chemotherapy, and radiotherapy (*National Cancer Institute*, 2014). Outcomes, however, depend very much on how early the cancer isdetected (NCI, 2014).

Worldwide, cervical cancer is both the fourth-most common cause of cancer and the fourth-most common cause of death from cancer in women (WHO, 2014). In 2012, an estimated 528,000 cases of cervical cancer occurred, with 266,000 deaths. This is about 8% of the total cases and total deaths from cancer. About 70% of cervical cancers occur in developing countries (WHO,

2014). In low-income countries, it is the most common cause of cancer death. In developed countries, the widespread use of cervical screening programs has dramatically reduced rates of cervical cancer (Canavan & Doshi (2000). In medical research, the most famous cell line known as HeLa was developed from cervical cancer cells of a woman named Henrietta Lacks (Jr. Charles (2014).

2.2 Burden of Cervical Cancer.

Cervical cancer is the cancer arising from the cervix (NCI, 2014) caused by oncogenic Human papillomavirus which is a major public health problem that continues to be one of the leading female genital cancers worldwide. About 80% of cases occur in developing countries and about 87% cervical cancer deaths occur in less developed regions (Abudukadeer, 2015 & GLOBOCAN (2012). In 2005, developing counties had about 80% of the 250,000 cervical cancer deaths which was also predicted to increase to 90% by 2020 (Techakehakij and Feldman, 2008).

Due to lack of awareness related to cervical cancer, screening, human papillomavirus (HPV) infection and availability of vaccine, the incidence and prevalence of cervical cancer is high in low and middle income countries. Therefore, there is an urge to improve the literacy level and health seeking behavior of women in other to reduce the burden of cervical cancer (Sumeyya Azam, 2014).

In Kenya, health professionals, from regional and national referral hospitals reported inadequacies in training or management of patients with cervical cancer (Kivuti-Bitok, 2013). Health professionals' lack of clinical skills and associated late stage cervical cancer was reported in South Africa (van Schalkwyk, 2008). Other studies highlighting the awareness level, skills of health care professionals and their major role in health education and prevention reported the same results and focused on increasing the skills and knowledge of health care professionals.

Cervical screening is the process of detecting and re- moving abnormal tissue or cells in the cervix before cervical cancer develops(Livingston, 2000).

Health workers especially nurses are often times looked upon as "role models" in health related issues. Health workers play a major role in enlightening the public on the availability and need for cervical cancer screening services. They are informed individuals who are expected to have more information and knowledge about several health related issues and also act as role models in uptake of preventive services but studies have documented otherwise. In a study among nurses

in Nnamdi Azikwe University Teaching Hospital, Nnewi, Nigeria on awareness of cervical cancer screening services, results showed that 87% were aware of the existence of cervical cancer screening services but only 5.7% had ever been screened for cervical cancer (Udigwe GO, 2006). Their attitude to and practice relating to such issues might positively or negatively influence the decision made by the community members. It is therefore pertinent to appraise their perception and utilization of cervical cancer screening services. This study therefore set out to assess the willingness and determinants of cervical cancer screening services among female health workers in Ibadan North Local Govt., Ibadan, Nigeria.

It has been observed that health workers (nurses) have good knowledge of cervical cancer but have limited understanding of the types of cervical cancer screening techniques and poor disposition towards undergoing cervical cancer screening (Awodele et al., 2011). Therefore, periodical seminars and training of health personnel especially the nurses which form a group of professionals that can give health education to women about cervical cancer is needed.

2.3 Diagnosis of Cervical Cancer

2.3.1 Biopsy

The Pap smear can be used as a screening test, but is false negative in up to 50% of cases of cervical cancer. Confirmation of the diagnosis of cervical cancer or precancer requires a biopsy of the cervix. This is often done through colposcopy, a magnified visual inspection of the cervix aided by using a dilute acetic acid (e.g. vinegar) solution to highlight abnormal cells on the surface of the cervix. Medical devices used for biopsy of the cervix include punch forceps, SpiraBrush CX, Soft Biopsy, or Soft-ECC. Colposcopic impression, the estimate of disease severity based on the visual inspection, forms part of the diagnosis.

Further diagnostic and treatment procedures are loop electrical excision procedure (LEEP) and conization, in which the inner lining of the cervix is removed to be examined pathologically. These are carried out if the biopsy confirms severe cervical intraepithelial neoplasia. Often before the biopsy, the doctor asks for medical imaging to rule out other causes of woman's symptoms. Imaging modalities such as ultrasound, CT scan and MRI have been used to look for alternating disease, spread of tumor and effect on adjacent structures. Typically, they appear as heterogeneous mass in the cervix.

2.3.2 Histopathological Reporting

A diagnosis of cervical cancer is made by the histopathological examination of cervical biopsies. As part of this process it is important for the tissue samples to be prepared appropriately. The stage of a cervical cancer and the presence of lymph node metastases are important indicators of prognosis and for determining treatment. Early stage disease is defined by varied histopathological criteria with conflicting evidence as to their significance (van de putte G et al; 2005). By definition, the diagnosis of early stage cervical cancer (International Federation of Gynecology and Obstetrics, FIGO stage IA and IA2) requires that the entire tumour is excised completely and is available for histopathological examination (Benedet et al; 2000). There are histological features that can be used to stratify women to higher risk or lower risk of metastatic disease (van de putte G et al; 2005). These histological features should be included in a pathology report. The pathology reports of cervical tumors should include the following histological features:

- tumour type
- tumour size
- extent of tumour (eg involvement of the vaginal wall or parametrium)
- depth of invasion
- pattern of invasion (infiltrative or cohesive invasive front)
- lymphovascular space invasion (LVSI)
- status of resection margins (presence of tumour and distance from margin)
- status of lymph nodes (including site and number of nodes involved)
- Presence of pre-invasive disease.

When assessing stoma involvement:

- all biopsy material should be taken into account
- It is important to be aware that a small tumor may be entirely removed by biopsy.

Pathological assessment should be quality assured and standardized, with readily accessible specialist review available if required, following discussion by the multidisciplinary team

2.3.3 Tumour Markers

Squamous cell carcinoma antigen (SCCA) belongs to a family of serine and cysteine protease inhibitors. The antigen is present in normal squamous cervical epithelium and its expression is

increased in cervical squamous cancers 39, 40. Pre-treatment levels of SCCA are related to tumour volume but are insufficiently reliable for identifying patients at risk of having pelvic lymph node metastases or parametrial involvement.

2.4 Cancer Subtypes

Histologic subtypes of invasive cervical carcinoma include the following: Though squamous cell carcinoma is the cervical cancer with the most incidence, the incidence of adenocarcinoma of the cervix has been increasing in recent decades. (Kumar, et al. (2007)

These subtypes includes squamous cell carcinoma (about 80-85%), adenocarcinoma (about 15% of cervical cancers in the United Kingdom, adenosquamous carcinoma,small cell carcinoma,neuroendocrine tumour, glassy cell carcinoma, villoglandular adenocarcinoma

Non-carcinoma malignancies which can rarely occur in the cervix include melanoma and lymphoma. The FIGO stage does not incorporate lymph node involvement in contrast to the TNM staging for most other cancers. For cases treated surgically, information obtained from the pathologist can be used in assigning a separate pathologic stage, but is not to replace the original clinical stage.

2.5 Staging of Cervical Cancer

Cervical cancer is staged by the International Federation of Gynecology and Obstetrics (FIGO) staging system, which is based on clinical examination, rather than surgical findings. It allows only these diagnostic tests to be used in determining the stage: palpation, inspection, colposcopy, endocervical curettage, hysteroscopy, cystoscopy, proctoscopy, intravenous urography, and X-ray examination of the lungs, skeleton and cervical conization.

_ Stage 1A cervical cancer

_ Stage 1B cervical cancer

_ Stage 2A cervical cancer

_ Stage 2B cervical cancer

_ Stage 3B cervical cancer

_ Stage 4A cervical cancer

_ Stage 4B cervical cancer

Cervical cancer is grouped into four stages.

Stage I: The cancer is found only in the cervix.

Stage II: The cancer has spread from the cervix to the upper part of the vagina or the tissue around the uterus. It has not spread to the pelvic wall. (The pelvic wall is the muscle and connective tissues that line the insides of the pelvic bones.) Cancer cells may also be found in the lymph nodes in the pelvis.

Stage III: The cancer has spread to the lower part of the vagina or to the pelvic wall. It may block the flow of urine to the bladder. Cancer cells may also be found in the lymph nodes in the pelvis.

Stage IV: The cancer has spread to other body parts within or outside of the pelvis. Cancer cells may be found in the bladder, rectum, abdomen, liver, intestines or lungs.

2.5.1 Clinical Staging

Cervical cancer is clinically staged using the FIGO criteria (Benedet et al; 2000). FIGO staging does not take into account results of computerized tomography (CT), magnetic resonance imaging (MRI) or positron emission tomography (PET).

i. Sentinel Node Surgery

There is evidence from a number of small case studies that it is feasible to identify sentinel lymph nodes during cervical cancer surgery. The evidence that the status of these nodes accurately predicts the status of the remaining pelvic lymph nodes is conflicting. Comparison of the results of these studies is hampered by variable methodology, and there have been no long term studies of follow up.

At present there is no evidence to support the use of sentinel node surgery in preference to pelvic lymphadenectomy in cervical cancer. Larger standardised studies are required.

ii. Pelvic Lymphadenectomy

No evidence was identified to address the adequacy of pelvic lymphadenectomy specifically in cervical cancer. Evidence from many studies indicates that there is considerable variation in the number of lymph nodes obtained from this procedure (Puente et al; 2004). There is no evidence relating the number of lymph nodes retrieved to long term outcome. Many of the studies lack information about how the tissue is handled by the pathologist.

This lack of good quality evidence illustrates the need for standardization of pathological assessment.

2.5.2 Radiological Staging

Radiological assessment of patients with visible cervical carcinoma is an essential part of the strategy in determining the most appropriate management of patients, both at primary presentation and with relapsed disease or complications of treatment.

Radiological studies often have inherent design weaknesses, which are difficult to eliminate.

Some of the disparity of results between individual studies may be dependent on:

- heterogeneity of equipment
- image interpretation and training
- clinical setting (specialist centre compared to district general/community hospital)
- MRI, CT methodology and sequences
- Advances in MRI, CT and PET technology.

i Primary Tumour Assessment

There is consistent evidence that MRI is more accurate than CT for radiological staging of cervical carcinoma (accuracies 40–97%) (Hricak et al; 2005) and both modalities are more accurate than clinical staging (Bipat et al; 2003). For women with contraindications to MRI scanning CT is appropriate. For women with clinically apparent stage IvA or IvB disease, post contrast spiral or multislice CT scans of chest, abdomen and pelvis are more appropriate than MRI (Hricak et al; 2005).

MRI technique is important in correct staging. Thin section axial and sagittal T2 sequences including axial oblique sections perpendicular to the long axis of the cervix, are of most value in primary tumour assessment (Bipat S, et al; 2013).Intravenous non-dynamic contrast in MRI is non-contributory in primary tumour staging.

Ultrasound is not generally reliable in either assessment of primary tumour size or nodal status. Transrectal ultrasound may be of value if undertaken by experienced operators (Follen et al; 2003). PET- CT can assess both the primary tumour and detect metastatic spread (Amit et al 2006). PET- CT has potential for more accurately selecting patients for surgery than PET imaging alone, in addition to contributing to more accurate treatment planning (Loft et al; 2007).

ii Primary Tumour Volume

Primary tumour volume is best assessed by MRI rather than CT tumour diameter less than 5-0 mm cannot be reliably imaged by either modality. Post-biopsy changes may also adversely affect tumour measurement, particularly in small tumours. Appearances following a loop excision biopsy or cone biopsy cause difficulty in assessing the size and extent of the primary tumour, which may have important staging and prognostic consequences.

There is some evidence that PET scans may also measure tumour volume, but false negative uptake also occurs following excision biopsy.

i. Vaginal Invasion

Vaginal invasion is best assessed by MRI, with accuracies ranging from 78-94%. Overstaging errors are reported in association with bulky primary tumours distending the fornices. CT staging accuracies are not available.

2.5.3 Parametrial Staging

Involvement of parametrium indicates inoperable FIGO IIB disease. Studies report variable accuracy for parametrial staging by MRI and CT, but MRI is generally superior to CT, with staging accuracy of 75-90% (de villiersem, 2004).

The greatest value of MRI in influencing treatment options lies in the high negative predictive value for parametrial invasion (85%). Full thickness disruption of the ring of cervical stroma by tumour on MRI corresponds to FIGO stage IIB disease.

Confirmation of an intact ring of cervical stroma, on adequate MRI assessment, confers potentially operable status. PET imaging alone cannot accurately determine early parametrial involvement.

Data are not available comparing the accuracy of PET-CT to MRI.

i. Bladder and Rectal Invasion

Assessment of bladder and rectal invasion is consistently more accurate with

CT and MRI than clinical staging, with the specificity of MRI considerably greater than CT.

There is heterogeneity of results from studies assessing detection of tumour involvement, which may be related to both procedure methodology and interpretation criteria in specialist hospitals

compared to community/district general hospitals (Hricak et al;2005). Several studies show negative predictive values for CT and MRI in bladder, rectal and ureteric invasion.

A normal appearance of bladder and rectum on MRI examination obviates the need for cystoscopy or sigmoidoscopy.

Intravenous urography (IvU) has been superseded as a standalone investigation, as

CT, MRI or ultrasound are as accurate in determining ureteric obstruction secondary to parametrial invasion and give additional information. Barium enemas are not routinely indicated.

ii. Pelvic or Para-aortic Lymph Nodes

Although not a part of the FIGO staging criteria, the involvement of pelvic or para-aortic lymph nodes in most histological types of cervical cancer, is the greatest single predictor of long term survival and cannot be assessed by clinical examination alone. Lymphangiography is probably less sensitive than other contemporary modalities for preoperative assessment with positive predictive values that are variable in cervical carcinoma (4% to 80%).

Lymphangiography may interfere with the specificity and interpretation of PET scans. There is consistent evidence that both CT and MRI have poor sensitivity for detection of nodal metastases, based on size criteria (generally cm short axis diameter cut off for positive involvement) and node morphology, in both the pelvic and para-aortic nodes. Poor sensitivity is due to the presence of metastases within normal sized lymph nodes. MRI is better than CT. PET-CT scans may be the most accurate imaging method of detecting involved lymph nodes.

MRI scans should ideally occur prior to excision biopsy, to avoid inflammatory changes and to allow more accurate measurement of tumor size.

iii. Pet (positron emission tomography)

PET is more accurate than CT or MRI in detecting metastatic lymphadenopathy, having the potential to significantly change patient management and survival. Patient numbers in PET studies tend to be small, but there is some evidence that PET is superior to MRI and CT in the detection of metastatic para-aortic nodes, with higher sensitivities and specificities. Sensitivities remain suboptimal, and possibly technique dependent, in nodes less than 0 mm in size. There is wide variation in fdg-PET imaging techniques with respect to the administered isotope dose, patient preparation and timing of scans post injection, with consequent heterogeneity in results.

PET sensitivity varies from 79% (Havrilesky et al; 2003). In the pelvic nodes to 35% to % 83 in the para-aortic nodes, with overall sensitivity for detection of pelvic and para-aortic nodes of 80% (Roh et al; 2005)

False positive nodal fdg-PET uptake may be secondary to inflammatory change from a variety of causes including infection and chronic granulomatous disease. (Loft et al; 2007)

It is important that metastatic involvement is confirmed by sampling or biopsy before there is a change to the planned treatment regimen.

PET-CT combined is emerging as the most accurate method for detection of nodal metastases in the pelvis and para-aortic nodes, with sensitivities of 75% and 00% respectively.

There is insufficient evidence to support the routine use of PET-CT to confirm operable status in patients staged as IB or less, given the limitations of negative predictive values for PET-CT in the detection of pelvic nodal metastases (Amit et al; 2006).

PET or PET-CT scans do not detect all nodes with micro metastases. (Loft et al; 2007)

If nodal enlargement is evident on staging MRI scans in patients with clinically operable disease, then PET scanning will determine the extent of potential metastatic involvement. The greatest benefit from PET-CT is in women with inoperable disease, considered potentially curable with chemo radiotherapy..This group of women is statistically more likely to have nodal or metastatic disease than those women suitable for surgery. Patients not suitable for surgery should be considered for a PET scan.

iv. Chest X-ray

Limited data are available on the use of chest X-rays in staging. Chest X-ray has identified metastases in 4% of women with clinical stage IIB or greater disease. In patients with FIGO stage IB disease there is a very low likelihood of pulmonary metastases.

CT scans are more accurate in comparison to chest x-ray in identifying pleural effusions, thoracic nodal status and parenchymal metastases (Hricaket al; 2006). Routine chest x-rays are not indicated in women with operable disease (FIGO IA1, IA2 and IB1).

ii. The Relative Benefit of Imaging Over other Options In Pre-treatment Staging

Use of MRI or CT in pre-treatment assessment is less invasive, more accurate, and confers cost/time benefits in ~~determining~~ the preoperative stage of patients, compared to conventional

FIGO investigations of IvU, cystoscopy, sigmoidoscopy and barium enema. MRI is more accurate than CT in correctly staging patients (Rockall et al; 2005). Cystoscopy and sigmoidoscopy should be reserved for women in whom a normal bladder or rectum cannot be confirmed on clinical or radiological assessment (CT or MRI). Nodal staging, which will determine prognosis, operability and radiotherapy fields, is most effectively determined by PET-CT.

Lymphangiography is invasive, probably less sensitive than other contemporary modalities for preoperative assessment and may interfere with the specificity and interpretation of PET scans. Assessment of pelvic and para-aortic nodal disease is most accurately determined by laparotomy or laparoscopic surgery. These are invasive, morbid procedures requiring a general anaesthetic. The alternative is to use pre-treatment imaging to determine nodal status, despite the limitations in sensitivity and specificities of current techniques (MRI, CT, PET and PET-CT).

- Cystoscopy and sigmoidoscopy should not be routinely performed for staging purposes.
- If imaging cannot exclude bladder or bowel involvement, cystoscopy and sigmoidoscopy should be used for staging.
- Ultrasound, Ivu and lymphangiography are not recommended for staging.

vi. Conveying the diagnosis

The information needs of women diagnosed with cancer and methods of conveying information are covered in sections. Diagnosis should be conveyed sensitively and in easily understood language.

2.6 Precancerous Lesions

Cervical intraepithelial neoplasia, the potential precursor to cervical cancer, is often diagnosed on examination of cervical biopsies by a pathologist. For premalignant dysplastic changes, cervical intraepithelial neoplasia grading is used.

The naming and histologic classification of cervical carcinoma precursor lesions has changed many times over the 20th century. The World Health Organization classification system was descriptive of the lesions, naming them mild, moderate, or severe dysplasia or carcinoma in situ (CIS). The term, cervical intraepithelial neoplasia (CIN) was developed to place emphasis on the spectrum of abnormality in these lesions, and to help standardize treatment (DeMay, (2007). It classifies mild dysplasia as CIN1, moderate dysplasia as CIN2, and severe dysplasia and CIS as

CIN3. More recently, CIN2 and CIN3 have been combined into CIN2/3. These results are what a pathologist might report from a biopsy. These should not be confused with the Bethesda system terms for Pap smear (cytopathology) results.

Among the Bethesda results: Low-grade Squamous Intraepithelial Lesion (LSIL) and High-grade Squamous Intraepithelial Lesion (HSIL). An LSIL Pap may correspond to CIN1, and HSIL may correspond to CIN2 and CIN3 however they are results of different tests, and the Pap smear results need not match the histologic findings (DeMay, M (2007).

2.7 Signs and Symptoms

The early stages of cervical cancer may be completely free of symptoms (Kumar, et al. (2007). Vaginal bleeding, contact bleeding (one most common form being bleeding after sexual intercourse), or (rarely) a vaginal mass may indicate the presence of malignancy. Also, moderate pain during sexual intercourse and vaginal discharge are symptoms of cervical cancer. In advanced disease, metastases may be present in the abdomen, lungs or elsewhere. In advanced disease, metastases may be present in the abdomen, lungs, or elsewhere. Symptoms of advanced cervical cancer may include: loss of appetite, weight loss, fatigue, pelvic pain, back pain, leg pain, swollen legs, heavy vaginal bleeding, bone fractures, and/or (rarely) leakage of urine or feces from the vagina. Bleeding after douching or after a pelvic exam is a common symptom of cervical cancer. Cervical cancers usually do not spread early. They tend to be slow growing and cause most of their problems in the pelvis.

2.8 Risk Factors of Cervical Cancer

The greatest risk factor for cervical cancer is infection with some types of HPV, followed by smoking. HIV infection is also a risk factor. However, not all of the causes of cervical cancer are known, several other cofactors that increase the risk of cancer of the cervix are smoking, HIV infection, Chlamydia infection, dietary factors, hormonal contraception, multiple pregnancies, exposure to the hormonal drug Diethylstilbestrol (DES) and a family history of cervical cancer (Marrazzo et al; 2001).

2.8.1 Human Papillomavirus

Human papilloma virus types 16 and 18 are the cause of 75% of cervical cancer cases globally, while 31 and 45 are the causes of another 10% (Dillman, 2009). Women who have many sexual partners (or who have sex with men who have had many other partners) have a greater risk. Of the 150-200 types of HPV known, 15 are classified as high-risk types (16, 18, 31, 33, 35, 39, 45, 51,52, 56, 58, 59, 68, 73, and 82), three as probable high risk (26, 53, and 66), and 12 as low-risk (6, 11, 40, 42, 43, 44, 54, 61, 70, 72, 81, and CP6108). Genital warts, which are a form of benign tumor of epithelial cells, are also caused by various strains of HPV.

Classification of a-human papillomavirus (a-HPV) genotypes by carcinogenic potential

Group 1 Carcinogenic to humans HPV 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59

Group 2A Probably carcinogenic to humans HPV 68

Group 2B Possibly carcinogenic to humans HPV 26, 53, 64, 65, 66, 67, 69, 70, 73, 82

Group 3 Not classifiable as to carcinogenicity in humans HPV 6, 11

Although, these serotypes are usually not related to cervical cancer. It is common to have multiple strains at the same time, including those that can cause cervical cancer along with those that cause warts. Infection with HPV is generally believed to be required for cervical cancer to occur (Snijders, et al. (2006).

2.8.2 Smoking

Cigarette smoking, both active and passive, increases the risk of cervical cancer. Among HPV-infected women, current and former smokers have roughly two to three times the incidence of invasive cancer. Passive smoking is also associated with increased risk, but to a lesser extent (NIH and NCI, (2015). Smoking has also been linked to the development of cervical cancer (Remschmidt, et al. (2013). Smoking can increase the risk in women a few different ways, which can be by direct and indirect methods of inducing cervical cancer (Luhn, et al. (2013). A direct way of contracting this cancer is a smoker has a higher chance of CIN3 occurring which has the potential of forming cervical cancer (Luhn, et al. (2013). When CIN3 lesions lead to cancer, most of them have the assistance of the HPV virus, but that is not always the case, which is why it can be considered a direct link to cervical cancer. Heavy smoking and long-term smoking seem to have more of a risk of getting the CIN3 lesions than lighter smoking or not smoking at all (Jensen, et al. (2012). Although smoking has been linked to cervical cancer, it aids in the

development of HPV which is the leading cause of this type of cancer. Also, not only does it aid in the development of HPV, but also if the woman is already HPV-positive, she is at an even greater likelihood of contracting cervical cancer (Jensen, et al. (2012).

2.8.3 Oral Contraceptives

Long-term use of oral contraceptives is associated with increased risk of cervical cancer. Women who have used oral contraceptives for 5 to 9 years have about three times the incidence of invasive cancer, and those who used them for 10 years or longer have about four times the risk (NIH and NCI,(2015).

2.8.4 Multiple Pregnancies

Having many pregnancies is associated with an increased risk of cervical cancer. Among HPV-infected women, those who have had seven or more full-term pregnancies have around four times the risk of cancer compared with women with no pregnancies, and two to three times the risk of women who have had one or two full-term pregnancies (NIH and NCI, (2015).

2.8.5 Nutrition

Vitamin A is associated with a lower risk as are vitamin B12, vitamin C, vitamin E, and beta-carotene (Myung SK, et al; 2011).

2.9 Knowledge of Cervical Cancer among Health Workers

According to a study carried out by Mwaka et al. (2013) on a qualitative study of perceptions of healthcare professionals on challenges and proposed remedies for cervical cancer help-seeking in post conflict northern Uganda, individual healthcare professional's challenges such as inadequate knowledge and skills about cervical cancer management was discovered. Also, in a study on Knowledge of cervical cancer and screening practices of nurses at a regional hospital in Tanzania, which was conducted by Urasa and Darj (2011), it was found that Less than half of the nurses had adequate knowledge regarding cervical cancer. Knowledge was more adequate among the young nurses and registered nurses than enrolled nurses. This also follows a previous study by Hyacinth et al. (2012) on cervical cancer, pap smear awareness and utilization of pap smear test among federal civil servants in north central Nigeria, which discovered that the level

of awareness of cervical cancer and Pap smear test was above average (50.9%) and below average (38.6%) respectively,

Furthermore, a study performed by Tchounga et al. (2014) on Cervical cancer prevention in reproductive health services: knowledge, attitudes and practices of midwives in Côte d'Ivoire, West Africa, it was observed that above half of the midwives had adequate knowledge on cervical cancer, but less than half of them had adequate knowledge on cervical cancer prevention strategies.

2.10 Screening

Checking the cervix by the Papanicolaou test, or Pap smear, for cervical cancer has been credited with dramatically reducing the number of cases of and mortality from cervical cancer in developed countries. Therefore, in simple terms, screening is looking for cancer before a person has any symptoms. This can help find cancer at an early stage. When abnormal tissue or cancer is found early, it may be easier to treat. By the time symptoms appear, cancer may have begun to spread (NIH 2016). There are different types or methods of cervical cancer screening, it includes the papanicolous test (pap smear), HPV test, visual inspection with ascetic acid and cervical cytology.

Pap smear screening every 3–5 years with appropriate follow-up can reduce cervical cancer incidence up to 80% (Arbyn, et al. (2010). Abnormal results may suggest the presence of precancerous changes, allowing examination and possible preventive treatment. The treatment of low-grade lesions may adversely affect subsequent fertility and pregnancy (DeMay, (2007). Personal invitations encouraging women to get screened are effective at increasing the likelihood they will do so. Educational materials also help increase the likelihood women will go for screening, but they are not as effective as invitations (Everett, et al. (2011).

According to the 2010 European guidelines, the age at which to start screening ranges between 20 and 30 years of age, "but preferentially not before age 25 or 30 years", and depends on burden of the disease in the population and the available resources (Arbyn, et al. (2010). Thou the most frequent method for cervical cancer screening is cytology, and there are alternative methods such as HPV DNA tests and Visual inspection with acetic acid (VIA).VIA is an alternative to cytology-based screening in low-resource settings (Denny L, 2005).

In the United States, screening is recommended to begin at age 21, regardless of age at which a woman began having sex or other risk factors. Pap tests should be done every three years between the ages of 21 and 65. In women over the age of 65, screening may be discontinued if no abnormal screening results were seen within the previous 10 years and no history of CIN 2 or higher exists (Karjane & Chelmow (2013). HPV vaccination status does not change screening rates. Screening can occur every 5 years between ages 30 and 65 when a combination of cervical cytology screening and HPV testing is used and this is preferred. However, it is acceptable to screen this age group with a Pap smear alone every 3 years. Screening is not beneficial before age 25 as the rate of disease is low. Screening is not beneficial in women older than 60 years if they have a history of negative results (NIH and NCI, (2015).

Liquid-based cytology is another potential screening method. Although it was probably intended to improve on the accuracy of the Pap test, its main advantage has been to reduce the number of inadequate smears from around 9% to around 1% (Karnon, et al. (May 2004).. This reduces the need to recall women for a further smear. The United States Preventive Services Task Force supports screening every 5 years in those who are between 30 and 65 years when cytology is used in combination with HPV testing (Moyer (2012). Pap smears have not been as effective in developing countries. This is in part because many of these countries have an impoverished health care infrastructure, too few trained and skilled professionals to obtain and interpret Pap smears, uninformed women who get lost to follow-up and a lengthy turn-around time to get results. These realities have resulted in the investigation of cervical screening approaches that use fewer resources and offer rapid results such as visual inspection with acetic acid or HPV DNA testing (WHO (2014).

2.10.1 The Pap Smear Test

The Pap test (or Pap smear) looks for precancers, cell changes on the cervix that might become cervical cancer if they are not treated appropriately. The Pap test is recommended for all women between the ages of 21 and 65 years old. During the Pap test, the doctor uses a plastic or metal instrument, called the speculum, to widen the vagina which helps the doctor to examine the vagina and the cervix, after which a few cells and mucus are collected from the cervix and the area around it. The cells are then placed on a slide or in a bottle of liquid and sent to a laboratory. The laboratory then checks to be sure that the cells are normal.

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2.10.2 History of Pap Smear Screening

In 400 BCE, Hippocrates noted that cervical cancer was incurable. Later in 1925 Hinselmann invented the colposcopeafterwhichPapanicolaou developed the Papanicolaou Technique in 1928.In1941, Pap smear screening began by Papanicolaou and Traut. In 1946, Aylesbury spatula was developed to scrape the cervix, collecting the sample for the Pap smear. The First successful in-vitro cell line was 1951 derived from biopsy of cervical cancer of Henrietta Lacks. In1976 HaraldzurHausen and Gisam found HPV DNA in cervical cancer and genital warts; Hausen later won the Nobel Prize for his work (Hausen & Harald et al. (2002). In1988 Bethesda System for reporting Pap results was developed. In 2006, the first HPV vaccine was approved by the FDA.

2.10.3 The HPV Testing Method

The HPV test looks for the virus (human papillomavirus) that can cause cell changes on the cervix. The HPV test checks for the virus, not cell changes. The test can be done at the same time as the Pap test, with the same swab or a second swab.

2.10.4 The Visual Inspection with Acetic acid (VIA) Method

Even though cervical cancer is a preventable disease, the reality is that it is still not prevented. Most of the middle and low income countries have failed to implement cervical cancer control program successfully (ACCP (2000). This is grossly due to the lack of resources and poorly organized health system which are important factors for failure of effective screening for cervical cancer in developing countries. Therefore, there is an urgent need of low cost approach for effective cervical cancer screening program (Doh, 2005). Hence, VIA, the method of visual inspection of cervix with acetic acid application is the preferable method for cervical cancer screening in low income countries (Goldie et al. 2001). VIA is a simple, cost effective approach for cervical cancer screening. It does not require sophisticated equipment and can be done by trained health workers and the results of the test are available immediately making it an attractive approach for use in low resource settings. As visual screening test does not rely upon laboratory services it is the most promising alternative to cytology where resources are limited. VIA is indicated for women who cervical cancer screening is recommended for and it is the best screening option where access to cervical cytology (pap smear) and HPV testing is not available. VIA therefore, can be done in women of all age groups after the onset of sexual activity up to

menopause, it can also be done for women during pregnancy but it is not suitable for postmenopausal women (Rahatgaonkar, 2012).

2.10.5 Advantages of Visual Inspection with Acetic acid (VIA) Method of Screening in Routine Use.

- The VIA has some advantages over tests which includes:
- Its simplicity i.e. no specialized skills are required. It can be taught to nurses, health workers and paramedical staff. It requires minimal training therefore it can be used even at rural hospitals, in camps at periphery for screening.
- Sensitivity of VIA in detecting high grade lesions seems to be as good as cytology.
- It does not cause any discomfort to women as the procedure is painless & requires only 2 -3 minutes
- compared to other screening tests in routine use, VIA is less costly
- It can be used where well equipped labs & cytopathologists are not available for interpretation of Pap smear slides
- VIA is real time screening test. A result of the test is available immediately, eliminating need for second visit for collection of report & reducing loss to follow up cases.

2.10.6 Limitations of Visual Inspection with Acetic acid (VIA) Method of Screening in Routine use.

- VIA cannot be relied on in postmenopausal women as the squamocolumnar junction recedes in endocervical canal. Test has inherent difficulties in identifying endocervical disease.
- VIA has low specificity compared with cytology and has high rate of false positivity. Adequate training of health workers is important to reduce falls positive referrals.
- Positive predictive value of the test is less, so considerable numbers of women with positive test do not have the disease resulting in over diagnosis and treatment therefore, there is chance of high referral rates which causes unnecessary anxiety in women.
- There is lack of standardization .The test has inherent limitation of subjective variation. No standardized method of quality control is available.

2.11 Willingness and Utilization of Cervical Cancer Screening among Health Workers

According to Urasa and Darj (2011), in a study on Knowledge of cervical cancer and screening practices of nurses at a regional hospital in Tanzania, it was discovered that most nurses (84.6%) had never had a Pap smear examination. Similarly, corresponding to a study by Tchounga et al. (2014) on Cervical cancer prevention in reproductive health services: knowledge, attitudes and practices of midwives in Côte d'Ivoire, West Africa, it was found that just a few midwives (18.4%) had benefited from a screening test for themselves. Also, it was observed by Were et al. (2011) in a study on Perceptions of risk and barriers to cervical cancer screening at Moi Teaching and Referral Hospital (MTRH), Eldoret, Kenya that of all the 219 women interviewed, 12.3% of participants had screened before. It was also discovered in a study by Arulogun and Maxwell (2012) on the perception and utilization of cervical cancer screening services among female nurses in University College Hospital, Ibadan, Nigeria that utilization of cervical cancer screening services among the female nurses was poor. Moreover, a study conducted on cervical cancer and pap smear awareness and utilization of pap smear test among federal civil servants in north central Nigeria stated that Pap smear test utilization rate was very low (10.2%).

2.12 Prevention

There are two main strategies in preventing cervical cancer today: regular screening using Pap smear and vaccination. Advancement in the understanding of cervical cancer pathology has grown significantly in the past decade. It is now known that virtually all cervical cancer cases are caused by persistent, untreated infection by one of the 15 known carcinogenic forms of Human Papillomavirus (HPV), considered "high-risk" HPV infections (Schiffman, M., et al., 2007). Infection with human papillomavirus (HPV), the virus that causes cervical cancer, is preventable through vaccination, but the vaccine should be given prior to get infection, which often occurs within a few years of sexual contact. For those women already infected, development of cervical cancer is preventable using relatively simple, low-cost screening and treatment approaches that can be implemented not only at the district level but also in the primary health level (WHO, 2012).

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2.12.1 Barrier protection

Barrier protection and/or spermicidal gel use during sexual intercourse decreases cancer risk. Condoms offer protection against cervical cancer. Evidence on whether condoms protect against HPV infection is mixed, but they may protect against genital warts and the precursors to cervical cancer (Manhart & Koutsky (2002). They also provide protection against other STIs, such as HIV and Chlamydia, which are associated with greater risks of developing cervical cancer.

Condoms may also be useful in treating potentially precancerous changes in the cervix. Exposure to semen appears to increase the risk of precancerous changes (CIN 3), and use of condoms helps to cause these changes to regress and helps clear HPV. One study suggests that prostaglandin in semen may fuel the growth of cervical and uterine tumors and that affected women may benefit from the use of condoms (Medical Research Council (UK).). Abstinence also prevents HPV infection.

2.12.2 Vaccination

Two HPV vaccines (Gardasil & Cervarix) reduce the risk of cancerous or precancerous changes of the cervix and perineum by about 93% and 62%, respectively (Medeiros, et al. (2009). The vaccines are between 92% and 100% effective against HPV 16 and 18 up to at least 8 years. HPV vaccines are typically given to age 9 to 26 as the vaccine is only effective if given before infection occurs. The vaccines have been shown to be effective for at least 4 to 6 years, and they are believed to be effective for longer; however, the duration of effectiveness and whether a booster will be needed is unknown. The high cost of this vaccine has been a cause for concern. Several countries have considered (or are considering) programs to fund HPV vaccination.

Since 2010, young women in Japan have been eligible to receive the cervical cancer vaccination for free. In June 2013, the Japanese Ministry of Health, Labor and Welfare mandated that, before administering the vaccine, medical institutions must inform women that the Ministry does not recommend it. However, the vaccine is still available at no cost to Japanese women who choose to accept the vaccination. (The Asahi Shimbun, 2013).

2.13 Treatment

The treatment of cervical cancer varies worldwide, largely due to access to surgeons skilled in radical pelvic surgery, and the emergence of "fertility-sparing therapy" in developed nations.

Because cervical cancers are radiosensitive, radiation may be used in all stages where surgical options do not exist. Micro-invasive cancer (stage IA) may be treated by hysterectomy (removal of the whole uterus including part of the vagina). For stage IA2, the lymph nodes are removed, as well. Alternatives include local surgical procedures such as a loop electrical excision procedure or cone biopsy. For 1A1 disease, a cone biopsy (cervical conization) is considered curative. If a cone biopsy does not produce clear margins (findings on biopsy showing that the tumor is surrounded by cancer free tissue, suggesting all of the tumor is removed), one more possible treatment option for women who want to preserve their fertility is a trachelectomy (Dolson& Laura (2001).

This attempts to surgically remove the cancer while preserving the ovaries and uterus, providing for a more conservative operation than a hysterectomy. It is a viable option for those in stage I cervical cancer which has not spread; however, it is not yet considered a standard of care, as few doctors are skilled in this procedure. Even the most experienced surgeon cannot promise that a trachelectomy can be performed until after surgical microscopic examination, as the extent of the spread of cancer is unknown. If the surgeon is not able to microscopically confirm clear margins of cervical tissue once the woman is under general anesthesia in the operating room, a hysterectomy may still be needed. This can only be done during the same operation if the woman has given prior consent. Due to the possible risk of cancer spread to the lymph nodes in stage 1b cancers and some stage 1a cancers, the surgeon may also need to remove some lymph nodes from around the uterus for pathologic evaluation. A radical trachelectomy can be performed abdominally or vaginally and opinions are conflicting as to which is better. A radical abdominal trachelectomy with lymphadenectomy usually only requires a two- to three-day hospital stay, and most women recover very quickly (about six weeks).

Complications are uncommon, although women who are able to conceive after surgery are susceptible to preterm labor and possible late miscarriage. Wait at least one year is generally recommended before attempting to become pregnant after surgery. Recurrence in the residual cervix is very rare if the cancer has been cleared with the trachelectomy. Yet, women are recommended to practice vigilant prevention and follow-up care including Pap screenings/colposcopy, with biopsies of the remaining lower uterine segment as needed (every 3--4 months for at least 5 years) to monitor for any recurrence in addition to minimizing any new exposures to HPV through safe sex practices until one is actively trying to conceive. Early stages

(IB1 and IIA less than 4 cm) can be treated with radical hysterectomy with removal of the lymph nodes or radiation therapy. Radiation therapy is given as external beam radiotherapy to the pelvis and brachy therapy (internal radiation). Women treated with surgery who have high-risk features found on pathologic examination are given radiation therapy with or without chemotherapy to reduce the risk of relapse.

2.14 Social Ecological Model

Health theories can be used to help organize factors that are related to a given health problem and shape future programs and interventions. I choose to use the social ecological model (SEM) because of its emphasis on multiple levels of influence, and its use in literature searches and program development in a variety of public health issues. Some of these topics include obesity prevention (Cassel, 2010), HIV prevention in female sex workers (Larios, et al., 2009), vaccine uptake (Kumar et al., 2012), among other topics. The SEM helps to understand factors affecting behavior and implies that behaviors both shape and are shaped by the social environment (Glanz). The five constructs of the SEM are described below.

- Public policy: local, state, and national laws and policies.
- Community: relationships between organizations, institutions, and informal networks within defined boundaries.
- Organizational: social institutions with organizational characteristics, and formal and informal rules and regulations for operations.
- Individual: Characteristics of the individual including knowledge, attitudes, behavior, self-concept, skills, etc. This includes the developmental history of the individual.

Table 2.1 **Description of Social Ecological Model**

SEM Level	Description
Individual	• Characteristics of an individual that influence behaviour change, including knowledge, attitudes, behaviour, self-efficacy, developmental history, gender, age, religious identity, racial/ethnic/caste identity, sexual orientation, socio-economic status, financial resources, values, goals, expectations, literacy, stigma, and others.
Interpersonal	• Formal (and informal) social networks and social support systems that can influence individual behaviors, including family, friends, peers, co-workers, religious networks, customs or traditions.
Community	• Relationships among organizations, institutions, and informational networks within defined boundaries, including the built environment (e.g., parks), village associations, community leaders, businesses, and transportation.
Organizational	• Organizationsor social institutions with rules and regulations for operations that affect how, or how well, for example, MNCHN services are provided to an individual or group; schools that include MNCHN in the curriculum.
Policy/Enabling Environment	• Local, state, national and global laws and policies, including policies regarding the allocation of resources for maternal, newborn, and child health and access to healthcare services, restrictive policies (e.g., high fees or taxes for health services), or lack of policies that require childhood immunizations.

Table 2.2 **BARRIERS AND FACILITATORS TO CERVICAL CANCER SCREENING IN NIGERIA (using SEM).**

Social Ecological Model Construct	Facilitators of Screening	Barriers to Screening
Public Policy	Private health insurance	Public or no health insurance, inconsistent screening guidelines within country, No registry system to keep track of who has been and needs to be screened
Community	Cervical cancer programs partnering with existing public health programs, use of local radio broadcasting programs as an avenue to increase education on cervical cancer	Incorporating cervical cancer screening into maternal/child health/family planning clinics
Organizational	Mobile screening units, personal invitations to screening, low cost of exam, living close to a screening center, free exam, High level of satisfaction from previous healthcare experiences	Living too far from screening center, test is too expensive, negative staff attitudes, limited access to doctors

Interpersonal	Being married, physician recommendation, Knowing women socially who have been screened, having a male partner who is supportive, participating in awareness-raising events	Never having been married, being currently unmarried , no family history of cervical cancer, having a male partner who is not supportive of screening
Individual	Development of symptoms, having adequate information on the test and/or screening guidelines, being of low socio-economic status (when screening is subsidized), using contraception, Women first seeking medical attention from a physician when ill, high income, being young.	Being elderly not feeling at risk, no symptom, fear of exam, fear of outcome of results, lack of interest, thinking that test is unpleasant, believing that they are not at risky age, feeling of violation of privacy, lack of adequate information, belief that screening brings bad luck, having no time, mistrust of providers, high socioeconomic status (when screening is subsidized), low education, being poor

CHAPTER THREE

METHODOLOGY

3.1 Study Area

This study was conducted in Ibadan, the capital of Oyo State. Oyo State is one of the 36 states and one of the five South West states in Nigeria. Ibadan is the largest city in West Africa and one of the most populous cities in Nigeria. It is the capital of Oyo State which is located between longitude 70 20' and 70 40' East of the Greenwich meridian and latitude 30 55' and 40 10' North of the equator. The state has a land mass of 27, 249sq kilometer. It is bounded by Kwara State, Ogun State, Osun State and Benin Republic in the North, South, East and West respectively. It has a population of approximately 5.5 million. It has three senatorial district; Oyo North, Oyo Central and Oyo South, with 33 local government areas.

Ibadan has a total area of 1,190 square meters. It has a tropical wet and dry climate with a relative constant temperature throughout the course of the year. There are 11 local government areas in Ibadan consisting of five urban including Ibadan North LGA and six semi-urban local government areas. It is mostly dominated by Yoruba tribe and the predominant religions are Islam and Christianity.

Ibadan North is a Local Government Area in Oyo State, Nigeria. Its headquarters are in Agodi. It has an area of 27 km² and a population of 306,795 at the 2006 census. The postal code of the area is 200 ("Post Offices- with map of LGA".NIPOST. Retrieved 2009-10-20.). Ibadan North local govt. is bounded in the West by Ido and Ibadan North West Local Governments. It is bounded in the East by Lagelu, Egbeda and Ibadan South East Local Government respectively and bounded in the North by Akinyele Local Government. All PHC centers in Ibadan North LGA which includes 15 government-owned primary health care facilities with a total of 111 primary health care providers and about 26 private primary health care centers.

There are fifteen (17) health care facilities in Ibadan north local government which include of one (1) tertiary health care facility, one (1) secondary health care facility and fifteen primary health care facilities (15). The government-owned primary health care facilities consist of 111 primary health care workers in which 39 are males while 72 are females.

3.2 Study Design

A cross sectional study design was employed for the study.

3.3 Study Population

All PHC workers in Ibadan North LGA including doctors, nurses/midwives, CHO, CHEW, JCHEW, Lab Techs, ~~Pharmacists~~, med recorders, h/attend, h/asst, social worker others.

3.4 Sample Size Estimation: The sample size required for this study was calculated using the sample size formula for single population.

$$n = \frac{Z\alpha^2 p\, q}{d^2}$$

Where: Zα= Standard Normal deviate (1.96) corresponding to 95% level of confidence.

n = minimum estimated sample size

p = 0.264; prevalence of utilization of Pap smear (Ehimere et al. 2015)

d= degree of allowance of error at 0.05

$$n = \frac{1.96^2 * (0.264)(0.736)}{0.05^2}$$

$$n = \frac{3.8416 * 0.1943}{0.0025}$$

$$n = \frac{0.7464}{0.0025}$$

n = 298.56

n= 299 participants

3.5 Sampling Technique

All PHC workers were included in the study while simple random sampling by balloting was used to select health workers from private health facilities. Every consenting respondent who was available during the proposed four weeks duration of this study was administered the questionnaire.

3.6 Study Instrument

A self-administered pre-tested structured questionnaire consisting of six-sections including Section A: Socio-Demographic characteristics which collected data on age at last birthday, sex,

Section B: Knowledge of benefits of early screening and harm of late presentation

Section C: Knowledge of primary health care workers on cervical cancer screening methods.

Section D: Utilization of cervical cancer screening methods

Section E: Determinants of utilization of cervical cancer screening services

Section F: Willingness to screen for cervical cancer and its determinantswill be used to collect data from respondents about the determinants and their willingness to take the cervical cancer screening.

3.7 Data Collection Process

The questionnaires were self-administered and it involved the researcher and a trained research assistant. The research assistant was trained on the content of the questionnaire in order to render effective assistance to respondents if needed. The questionnaire was distributed to all consenting respondents for the duration of four weeks. The researcher was also at hand to offer assistance and supervise the research assistant to ensure quality and complete data collection. On completion, collection was done by both the principal investigator and research assistant. However, where immediate collection of the questionnaires was not possible, the questionnaire was collected the next day.

3.8 Data Analysis:

Data was analyzed using the Statistical Package for Social Sciences (SPSS version 20). Descriptive statistics of frequencies, percentages, and appropriate chats was used to summarize the data that are categorical. Chi square test was used to determine the relationship between the two different categorical variables i.e. cervical cancer screening and the factors to be investigated that may affect cervical cancer screening at 5% significant levels. Logistic regression was done to determine factors that are independently associated with cervical cancer screening.

3.9 Study Variables

Dependent Variables:

- The willingness of cervical cancer screening.
- The utilization of cervical cancer screening.
- The knowledge of cervical cancer screening: knowledge questions were scored using 11 as the mean score (75 percent of the total score). Respondents who scored above the mean score were categorized has having good knowledge, while respondents who scored below the mean score were categorized has having poor knowledge.

Independent Variable: Determinants (age, marital status, ethnicity, religion and family type, education, income).

3.10 Inclusion Criteria:

- All female primary health care workers in Ibadan North LGA

3.11 Ethical Consideration

- Ethical approval for the study was obtained from the Oyo State Ministry of Health Research Ethics Committee. Approval was also obtained from the Medical officer of health (M.O.H) of Ibadan North local government where the study was carried out.
- **Respect for Persons:** no person was coerced to participate in the study if they do not voluntarily consent.

- **Voluntariness:** through the informed consent potential participants were informed on their right to participate or withdraw from the study anytime they deem fit without any problems as no one is under compulsion to participate in the study.

- **Informed Consent:** Respondents' informed consent was sought after explaining the purpose of the study before distributing the questionnaires. The informed consent contained the study title, the purpose, the benefit of the study and the risk attributed to the study. They were also informed about their rights to withdraw from the study should they feel the need to. Consent was gotten when they sign the informed consent form.

- **Confidentiality:** The names of the respondents were not included in the questionnaires to preserve privacy, only serial numbers were used. The questionnaires were stored properly and were only assessed by me. Participants were also told of measures to protect their privacy and that data will only be used for the purpose of the study solely.

- **Beneficence:** the study can serve as a basis for other studies on willingness to screen for cervical cancer and its determinants among PHC workers in Ibadan

- **Non-maleficence:** the risk to participants will be minimal if any in this study.

- **Justice:** there will be fair and unbiased selection of the participants giving everyone a fair chance to participate.

CHAPTER FOUR

RESULTS

4.1 Socio-demographic Characteristics of Respondents

Overall 313 questionnaires were distributed and all participants returned completed questionnaire. The mean age of respondents was 33 ± 10 years and majority (73.5%) of respondents were less than 40 years. More than half (55.3%) of the respondents were married while more than half were nurses (55%). One hundred and fifty-six (49.8%) of the respondents were multiparous (Table 4.1).

Table 4.1 Socio-demographic Characteristics of Respondents

Variables	Frequency(n=313)	Percentages (%)
Age:		
< 40 years	230	73.5
40 years and above	83	26.5
Marital status		
Not married	140	44.7
Married	173	55.3
Occupation of respondents		
Doctor	28	8.9
Nurse/midwife	172	55.0
Pharmacist	14	4.5
Community health officer	29	9.3
Social Worker	1	0.3
Laboratory Technician	37	11.8
Ward maid	32	10.2
Parity		
No children	Nulliparous	115	36.7
1-2 children	Primiparous	27	8.6
3-4 children	Multiparous	156	49.8
>4 children	Granmultiparous	15	4.8

4.2 Knowledge of Risk Factors Associated with Cervical Cancer

More than two- thirds (70.9%) of the respondents reported that having multiple sexual partners is a risk factor of cervical cancer, less than half reported that having sexual intercourse before the age of 20 years (44.4%) and polygamy (42.5%) are risk factors associated with cervical cancer while more than a third responded that HIV infection (39.9%) and multiple pregnancy (38%) were risk factors associated with cervical cancer (Figure 1). However, 30.4% of the respondents said smoking was an associated risk factor for cervical cancer.

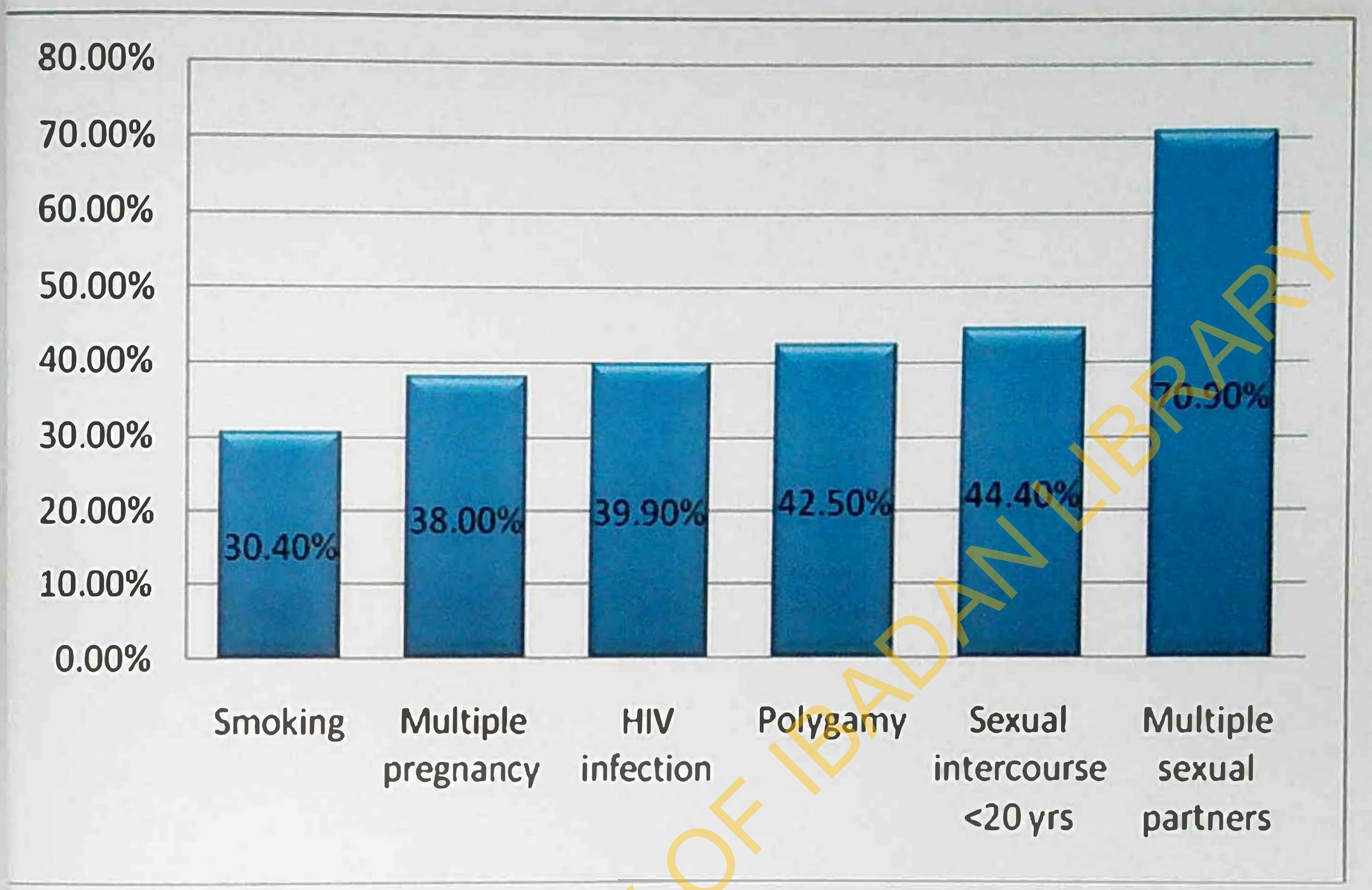

Figure 1: **Knowledge of the Risk Factors for Cervical Cancer**

4.3 Knowledge on Symptoms of Cancer of the Cervix

Two-thirds of the respondents (67.7% and 67.1%) were aware that bleeding and offensive discharge were symptoms of cervical cancer (Figure 2). More than half (53% and 51.4%) reported that moderate pain and weight loss were symptoms of cervical cancer. About one-third of the respondents (36.4% and 33.2%) reported that high fever and loss of appetite were symptoms of cervical cancer.

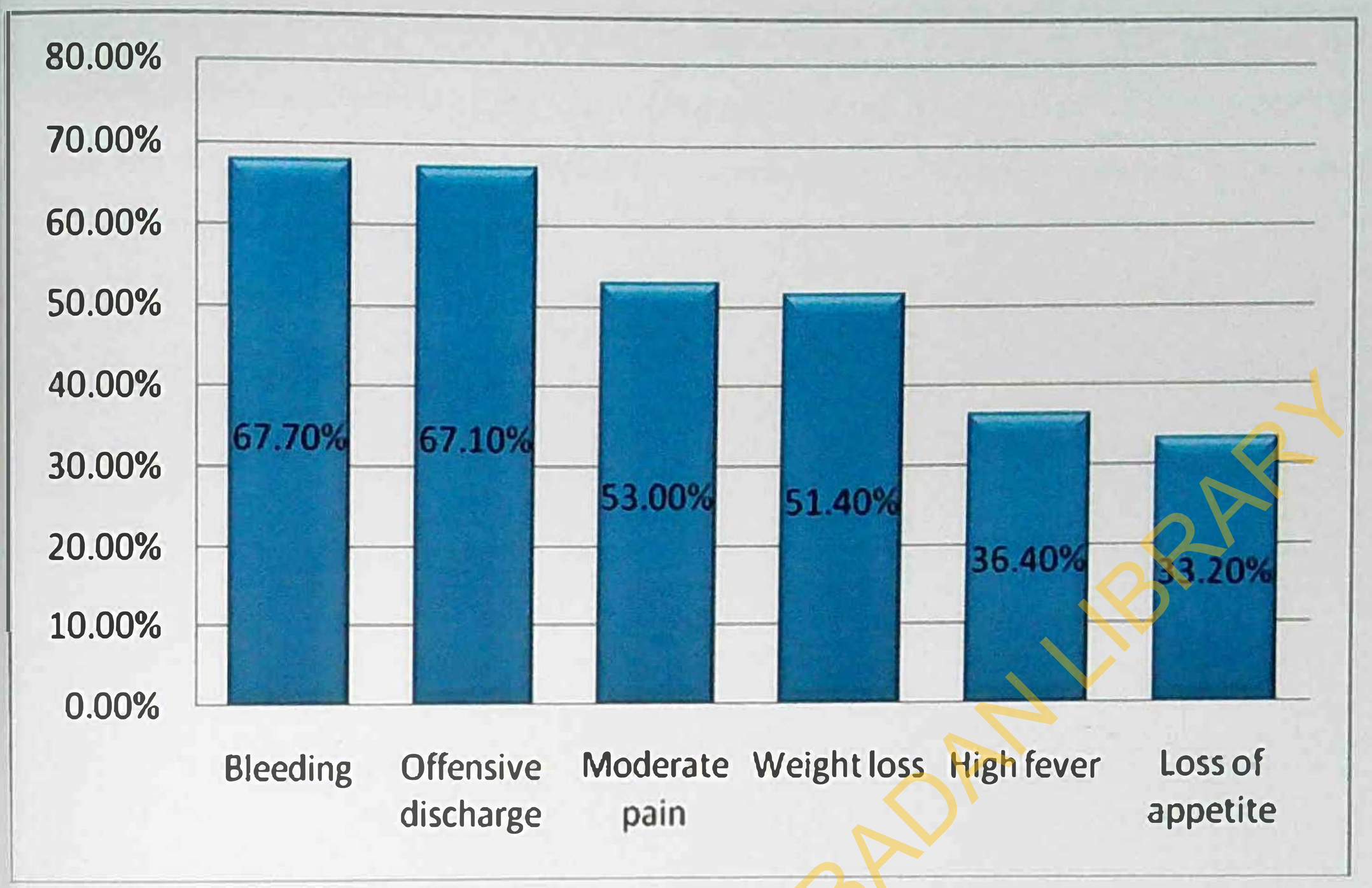

Figure 2: Knowledge on Symptoms of Cancer of the Cervix

4.4 Awareness of Cervical Cancer Screening Methods

More than half (54.3%) of the respondents were aware of Pap smear while less than half (41.5%) reported they were aware of HPV test (Figure 3). Also 42.8% were aware of cervical cytology and less than a third (25.9%) reported they were aware of visual inspection with acetic acid as a cervical cancer screening method.

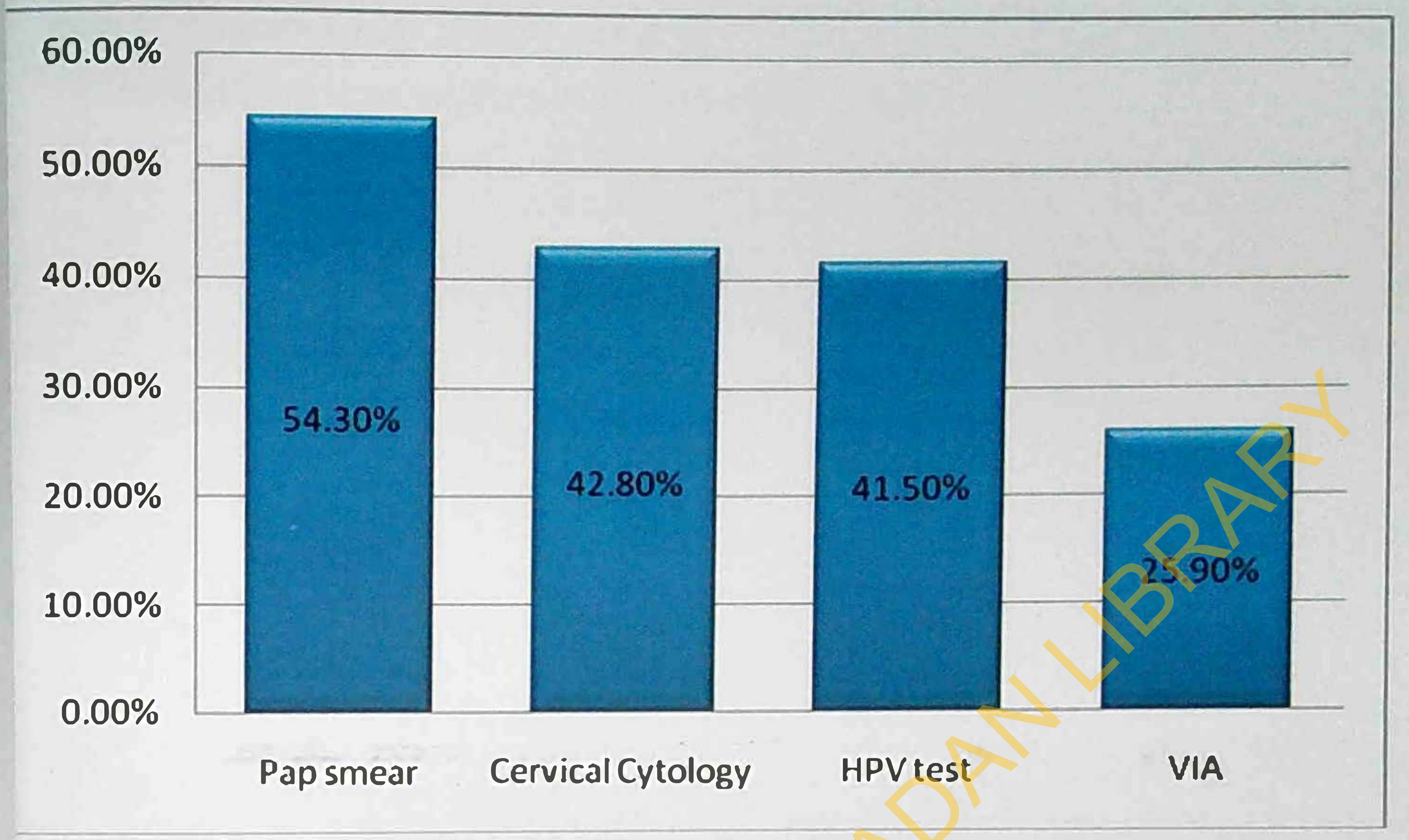

Figure 3: Awareness of Cervical Cancer Screening Methods

4.5 Knowledge about Cervical Cancer

Most of the respondents (89.8%) had poor knowledge about cervical cancer while only a few (10.2%) had good knowledge about cervical cancer (Table 4.2).

Table 4.2: Knowledge about Cervical Cancer

Knowledge	Frequency (N = 313)	Percentage (%)
Good	32	10.2
Poor	281	89.8

4.6 Utilization of the Cervical Screening Methods

Less than one-third of the respondents (25.9%) and (20.4%) had done Pap smear and Visual inspection with acetic acid respectively. Also, only 15.7% of the respondents had done cervical cytology and (13.4%) had done HPV test (Table 4.3).

4.6 Utilization of the Cervical Screening Methods

Less than one-third of the respondents (25.9%) and (20.4%) had done Pap smear and Visual inspection with acetic acid respectively. Also, only 15.7% of the respondents had done cervical cytology and (13.4%) had done HPV test (Table 4.3).

Table 4.3 Utilization of the Cervical Screening Methods

Screening methods used	Frequency(n=313)	Percentage (%)
Pap smear		
No	232	74.1
Yes	81	25.9
Cervical cytology		
No	264	84.3
Yes	49	15.7
HPV test		
No	271	86.6
Yes	42	13.4
Visual inspection with acetic acid		
No	249	79.6
Yes	64	20.4

4.7 Reasons for Non-utilization of Cervical Cancer Screening

Reasons given by respondents for non utilization of cervical cancer screening include; not feeling at risk of cervical cancer (29.4%), lack of awareness of the tests (22.4%), lack of awareness of where the screening can be done (16%), lack of time for the screening (15.7%), and financial constraint (14.4%) (Figure 4).

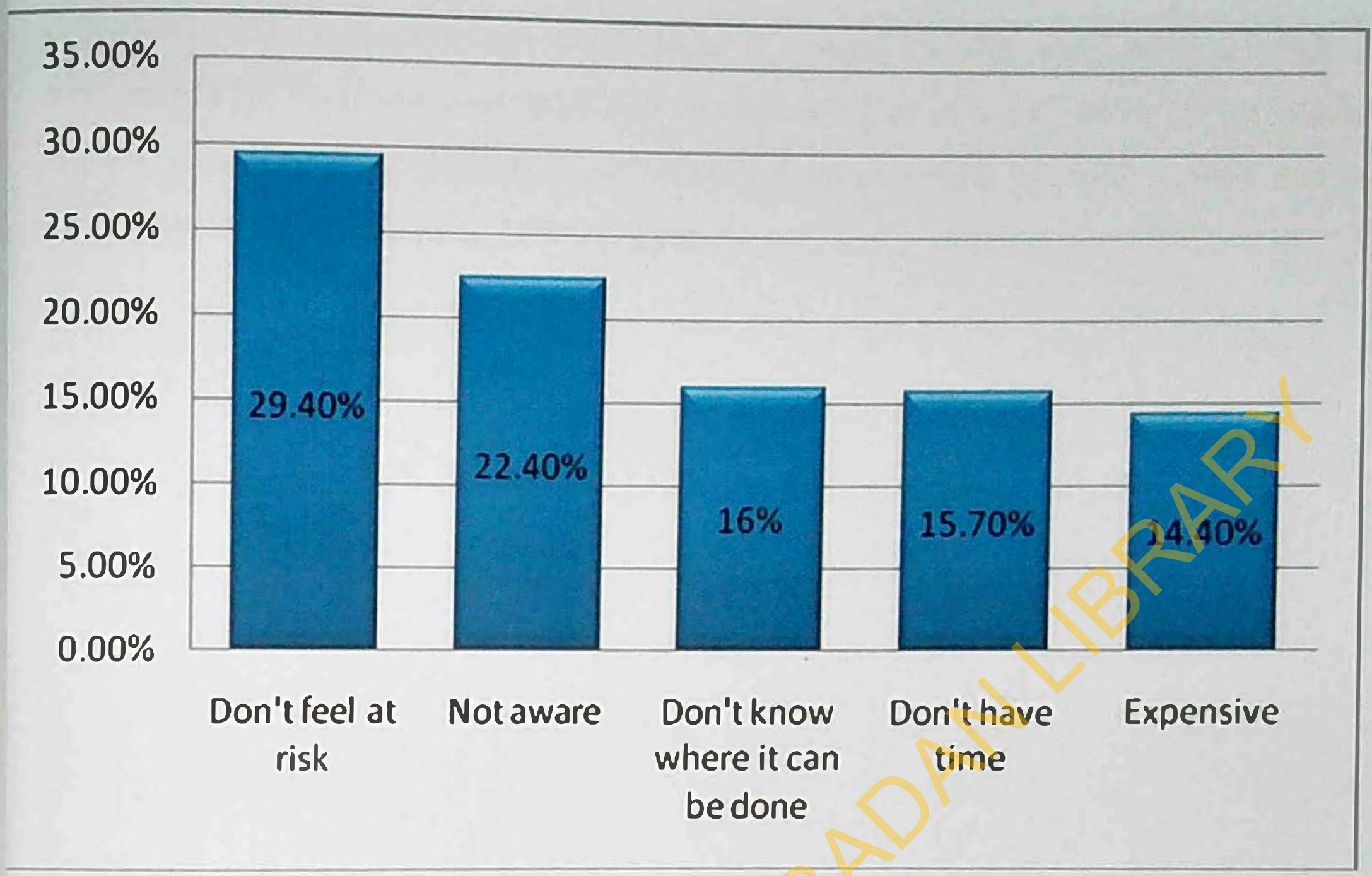

Figure 4: **Reasons for Non-utilization of Cervical Cancer Screening**

4.8 Conditions that will Encourage Respondents to Screen for Cervical Cancer

Conditions that will encourage respondents to screen include: availability of free screening services (23%), adequate knowledge and understanding of cervical cancer (21%), availability of mobile screening units (19%), close proximity to screening location (19%) and screening services at an affordable price (18%) (Figure 5).

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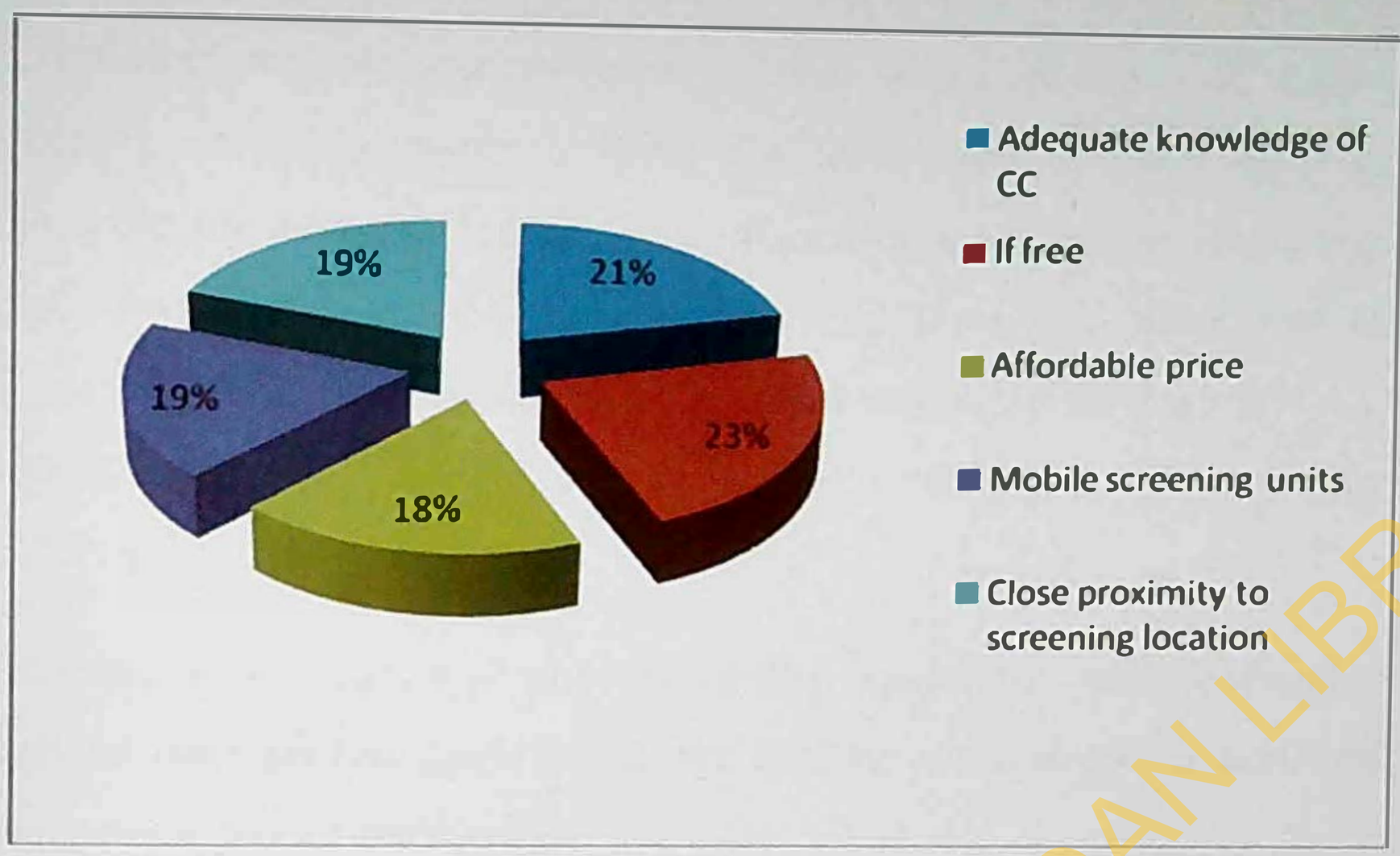

Figure 5: Willingness to Screen for Cervical Cancer by Respondents

4.9 Bivariate Analysis between Socio-demographic Factors / Knowledge and Utilization of Cervical Cancer Screening

Age, marital status, work experience and occupational status were significant factors for the utilization of cervical cancer screening. Those who were above 40 years utilized cervical cancer screening services compared to those who were below 40 years ($\chi^2 = 9.112$; $p = 0.003$); those who were married also significantly utilized cervical cancer screening services compared to those who were not married ($\chi^2 = 4.975$; $p = 0.026$); those who had work experience of about 10 – 19 years significantly utilized cervical cancer screening services ($\chi^2 = 14.718$; $p = 0.002$) while Nurses significantly utilized cervical cancer screening services compared to the others ($\chi^2 = 15.602$; $p = 0.016$). (Table 4.4)

However, knowledge was not statistically associated with utilization of cervical cancer. Respondents who had good knowledge utilized cervical cancer screening services better than those who had poor knowledge.

Table 4.4: Bivariate Analysis between Socio- demographic Factors / Knowledge and Utilization of Cervical Cancer Screening

Factors	Utilization		χ^2	p-value
	Yes (122)	No (191)		
Age (years)			9.112	0.003
Below 40	42 (34.4%)	99 (51.8%)		
40 and above	80 (65.6%)	92 (48.2%)		
Marital Status*			4.975	0.026
Not married	45 (32.1%)	95 (67.9%)		
Married	77 (44.5%)	96 (55.5%)		
Length of practice (years)			14.718	0.002
0 – 9	62 (31.2%)	137 (68.8%)		
10 – 19	33 (50.0%)	33 (50.0%)		
20 – 29	22 (57.9%)	16 (42.1%)		
30 and above	5 (50.0%)	5 (50.0%)		
Occupation			15.422	0.009
Doctor	19 (67.9%)	9 (32.1%)		
Nurse/Midwife	67 (39.0%)	105 (61.0%)		
Ward maid	9 (28.1%)	23 (71.9%)		
Lab Tech	11 (29.7%)	26 (70.3%)		
Community Health Officer	13 (44.8%)	16 (55.2%)		
Others	3 (21.4%)	12 (78.6%)		
Knowledge			1.821	0.177
Good	106 (37.7%)	175 (62.3%)		
Poor	16 (50.0%)	16 (50.0%)		

Table 4.4: Bivariate Analysis between Socio- demographic Factors / Knowledge and Utilization of Cervical Cancer Screening

Factors	Utilization		χ^2	p-value
	Yes (122)	No (191)		
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Below 40	42 (34.4%)	99 (51.8%)		
40 and above	80 (65.6%)	92 (48.2%)		
Marital Status*			4.975	0.026
Not married	45 (32.1%)	95 (67.9%)		
Married	77 (44.5%)	96 (55.5%)		
Length of practice (years)			14.718	0.002
0 – 9	62 (31.2%)	137 (68.8%)		
10 – 19	33 (50.0%)	33 (50.0%)		
20 – 29	22 (57.9%)	16 (42.1%)		
30 and above	5 (50.0%)	5 (50.0%)		
Occupation			15.422	0.009
Doctor	19 (67.9%)	9 (32.1%)		
Nurse/Midwife	67 (39.0%)	105 (61.0%)		
Ward maid	9 (28.1%)	23 (71.9%)		
Lab Tech	11 (29.7%)	26 (70.3%)		
Community Health Officer	13 (44.8%)	16 (55.2%)		
Others	3 (21.4%)	12 (78.6%)		
Knowledge			1.821	0.177
Good	106 (37.7%)	175 (62.3%)		
Poor	16 (50.0%)	16 (50.0%)		

4.10. Association between Socio- demographic Factors / Knowledge and Utilization of Cervical Cancer Screening.

The age of respondents showed a significant association with utilization of cervical cancer screening. Respondents who were 40 years and above were about 2 times more likely to utilize cervical cancer screening services compared to those who were below 40 years (OR= 0.49, 95% CI = 0.31 – 0.78) . Those who were married were about 1.7 times more likely to utilize cervical cancer screening services relative to those who were not married (OR = 0.59; 95% CI = 0.37 – 0.94). Moreover, nurses/midwives were about 8 times more likely to utilize cervical cancer screening services relative to doctors (OR = 8.44; 95% CI = 1.90 – 37.59). (Table 4.5)

However, the length of years in practice had no significant effect on the utilization of cervical cancer screening services. Those who were primiparous and multiparous were 60% and 43% respectively less likely to utilize cervical cancer screening services relative to those who were nulliparous (OR=0.40, 95% CI = 0.14 – 1.21; OR=0.57, 95% CI = 0.16 – 2.08). Those who had good knowledge about cervical cancer were about 39% less likely to utilize cervical cancer screening services relative to those who had poor knowledge (OR = 0.61; 95% CI = 0.29-1.26).

Table 4.5 Logistic Regression showing Association between Socio- demographic Factors / Knowledge and Utilization of Cervical Cancer Screening

Socio-demographic factors/Knowledge	β	S.E	P value	OR	95%CI
Age: < 40 years *(ref)*					
40 years and above	-0.72	0.239	0.003	0.49	0.31-0.78
Length of practice: < 10 *(ref)*					
10-19	-0.79	0.65	0.223	0.45	0.13-1.62
20-29	0.00	0.68	1.000	1.00	0.26-3.78
30-39	0.32	0.71	0.655	1.38	0.34-5.56
Marital Status: Not married *(ref)*					
Married	-0.53	0.24	0.026	0.59	0.37-0.94
Parity: Nulliparous *(ref)*					
Primiparous	-0.91	0.56	0.105	0.40	0.14-1.21
Multiparous	-0.56	0.66	0.396	0.57	0.16-2.08
Grandmultiparous	0.08	0.54	0.879	1.09	0.38-3.14
Occupation: Doctor *(ref)*					
Nurse/midwife	2.13	0.76	0.005	8.44	1.90-37.59
Lab technician	0.45	0.76	0.553	1.57	0.36-6.89
Community health officer	0.53	0.74	0.476	1.69	0.40-7.20
Ward maid	0.94	0.66	0.158	2.55	0.69-9.38
Others	1.18	0.75	0.114	3.25	0.75-14.02
Knowledge: Poor *(ref)*					
Good	-0.50	0.37	0.181	0.61	0.29-1.26

4.11: Bivariate Analysis between Socio-demographic Characteristics and Willingness to screen

Only parity was statistically associated with respondents' willingness to screen for cervical cancer. Those who were multiparous had a significantly higher willingness to screen for cervical cancer compared to those who were either nulliparous, primiparous or grandmultiparous (χ^2 = 13.425; p = 0.004). (Figure 4.6)

Respondents who were 40 years and above were more willing to screen for cervical cancer (52.6%) than those below 40 years (47.4%). Married health workers were more willing to screen for cervical cancer than those who were not married. Nurses/midwives were more willing to screen for cervical cancer than doctors, ward maids, Lab Technicians, CHOs and Pharmacists. These characteristics were however not statistically significant.

Table 4.6: Bivariate Analysis between Socio-demographic Characteristics and Willingness to screen

Socio-demographic factors	Willingness to screen		χ^2	p-value
	Yes	No		
Age (years)			1.513	0.219
Below 40	101 (47.4%)	40 (40.0%)		
40 and above	112 (52.6%)	60 (60.0%)		
Marital Status			0.826	0.363
Not married	99 (70.7%)	41 (29.3%)		
Married	114 (65.9%)	59 (34.1%)		
Occupation			11.964	0.063
Doctor	14 (50.0%)	14 (50.0%)		
Nurse/Midwife	127 (73.8%)	45 (26.2%)		
Ward maid	23 (71.9%)	9 (28.1%)		
Lab Tech	23 (62.2%)	14 (37.8%)		
Community Health Officer	19 (65.5%)	10 (34.5%)		
Pharmacist	7 (50.0%)	7 (50.0%)		
Social worker	0 (0.0%)	1 (100.0%)		
Parity*			13.425	0.004
Nulliparous	87 (75.7%)	28 (24.3%)		
Primiparous	13 (48.2%)	14 (51.8%)		
Multiparous	107 (68.6%)	49 (31.4%)		
Grandmultiparous	6 (40.0%)	9 (60.0%)		

***Statistically significant at $p < 0.05$**

4.12 Association between the Willingness to Screen for Cervical Cancer and the Social-demographic Factors among Respondents

The age of respondents showed no significant association with willingness to screen. Respondents who were 40 years and above were about 1.4 times more willing to screen for cervical cancer compared to those who were below 40s years (OR= 1.35, 95% CI = 0.84 – 2.19) . Again, the length of years in practice had no significant effect on the willingness of respondent to screen for cervical cancer. Moreover, marital status also had no significant effect on willingness, with those who were married been 1.25 times more likely to be willing to screen for cervical cancer relative to those who were not married (OR=1.25, 95% CI = 0.77- 2.02). Furthermore, those who are primiparous and grandmultiparous are 70% and 78% respectively less likely to be willing relative to those who are nulliparous (OR=0.30, 95% CI = 0.13 – 0.71; OR=0.22, 95% CI = 0.07 – 0.66). In addition, nurses/midwives are about 3 times more likely to be willing to screen relative to doctors (OR= 2.82, 95% CI = 1.25 – 6.38).

Table 4.7 Logistic Regression showing Association between the Willingness to Screen for Cervical Cancer and the Social-demographic factors among Respondents

Socio-demographic factors	β	S.E	P value	OR	95%CI
Age: < 40 years *(ref)*					
40 years and above	0.302	0.246	0.219	1.35	0.84-2.19
Length of practice: < 10 *(ref)*					
10-19	1.22	0.66	0.066	3.39	0.92-12.46
20-29	1.24	0.70	0.076	3.45	0.88-13.57
30-39	1.06	0.73	0.147	2.89	0.69-12.07
Marital Status: Not married *(ref)*					
Married	0.223	0.245	0.364	1.25	0.77-2.02
Parity: Nulliparous *(ref)*					
Primiparous	-1.21	0.44	0.006	0.30	0.13-0.71
Multiparous	-0.35	0.28	0.204	0.70	0.41-1.21
Grandmultiparous	-1.54	0.57	0.007	0.22	0.07-0.66
Occupation: Doctor *(ref)*					
Nurse/midwife	1.04	0.42	0.013	2.82	1.25-6.38
Ward maid	0.94	0.55	0.09	2.56	0.88-7.44
Lab technician	0.50	0.51	0.33	1.64	0.61-4.44
Community health officer	0.64	0.66	0.24	1.90	0.66-5.51

Table 4.7 Logistic Regression showing Association between the Willingness to Screen for Cervical Cancer and the Social-demographic factors among Respondents

Socio-demographic factors	β	S.E	P value	OR	95%CI
Age: < 40 years *(ref)*					
40 years and above	0.302	0.246	0.219	1.35	0.84-2.19
Length of practice: < 10 *(ref)*					
10-19	1.22	0.66	0.066	3.39	0.92-12.46
20-29	1.24	0.70	0.076	3.45	0.88-13.57
30-39	1.06	0.73	0.147	2.89	0.69-12.07
Marital Status: Not married *(ref)*					
Married	0.223	0.245	0.364	1.25	0.77-2.02
Parity: Nulliparous *(ref)*					
Primiparous	-1.21	0.44	0.006	0.30	0.13-0.71
Multiparous	-0.35	0.28	0.204	0.70	0.41-1.21
Grandmultiparous	-1.54	0.57	0.007	0.22	0.07-0.66
Occupation: Doctor *(ref)*					
Nurse/midwife	1.04	0.42	0.013	2.82	1.25-6.38
Ward maid	0.94	0.55	0.09	2.56	0.88-7.44
Lab technician	0.50	0.51	0.33	1.64	0.61-4.44
Community health officer	0.64	0.66	0.24	1.90	0.66-5.51

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Discussion

5.1.1 Knowledge of Cervical Cancer Screening Methods

The knowledge of cervical cancer screening methods is very important to the prevention of cervical cancer. It was found in our study that knowledge about cervical cancer is poor which was relatively lower compared to a study on knowledge of cervical cancer and screening practices of nurses at a regional hospital in Tanzania, which was conducted by Urasa and Darj (2011), it was found that less than half of the nurses had adequate knowledge regarding cervical cancer. Although, it was observed in our study that the knowledge of Pap smear was relatively high, which agrees with a study done by Ilter et al. 2010 on women's knowledge of Pap smear test and human papillomavirus: acceptance of HPV vaccination to themselves and their daughters in an islamic society. Similarly, Rezaie-Chamani et al. 2012 observed that almost half of the population was aware of Pap smear as a cervical cancer screening method.

Ekane et al. 2015 noticed that above half of the respondents had undergone the screening test. In addition, Assoumou et al. 2015 reported in a study to know the awareness and knowledge regarding cervical cancer, pap smear screening and human papillomavirus infection in Gabonese women that more than half of them had undergone cervical cancer screening.

Furthermore, our results reveals that almost half of the respondents had a good knowledge of cervical cytology as a screening method for cervical cancer which is low compared to a study done in the northern part of Nigeria (Sokoto) by Oche et al. in 2013.

However, our study showed that more than half of the respondents had not heard about HPV test as a method of screening for cervical cancer which is relatively high compared to a study done by Agida et al. 2015 which was done to assess the knowledge and perception of HPV vaccines among the antenatal women in a Nigerian tertiary hospital. Again, in a study conducted to assess the perception of Nigerian women about HPV, cervical cancer and HPV vaccine by Akanbi et al. 2015, it was discovered that only a minimal proportion of the respondents had knowledge about HPV which is comparatively low to the findings of our present study. Furthermore, in a study

done at the Lagos State University Teaching Hospital by Chidozie et al. 2011, it was reported that female nurses had a poor knowledge of HPV vaccines, although most of the nurses expressed a desire to be vaccinated which was in agreement to our study.

In addition, a study done to know the awareness of visual inspection with acetic- acid (VIA) in cervical cancer screening among nurses in Kaduna state showed that nurses in secondary health care institutions of the state were not aware of using VIA in screening for cervical cancer. This result was in agreement with our study which showed that almost all the respondent had a poor knowledge of VIA.

5.1.2 Knowledge of Cervical Cancer and the Risk Factors Associated with cervical cancer

In our present study, even though almost all the respondents had heard about cervical cancer, there is still a poor knowledge of cervical cancer which is in consonance with a study done by Oche et al. 2013. Similarly, our findings was in agreement with a study done among Garbonise women by Assoumou et al. 2015 which stated that there is a very poor level of knowledge about cervical cancer amongs Garbonise women. Also, in a study done on the knowledge and screening for cervical cancer among women in Mangalore city by Kumar and Tanya, 2014, it was discovered that most women had a poor knowledge of cervical cancer and this finding was in harmony with ours.

Moreover, above half of the respondents in a study on utilization of screening services for cancer of the cervix in Markurdi Nigeria by Utoo et al. 2013, had a high knowledge of cervical cancer, which was in line with our findings too. Olubunmi et al. 2016 also gathered that knowledge about cervical cancer among women at adeoyo teaching hospital in Nigeria was fair.

However, Moore et al. 2014 made a discovery in a study to assess the knowledge of cervical cancer risk factors among educated women in Lome Togo that women generally had a poor knowledge of the risk factors of cervical cancer. This result agreed with ours with most of the respondents choosing wrong factors as risk factors associated with the disease.

Moreover, according to a study done by Kivistik et al. 2011, the knowledge of cervical cancer risk factors is poor and it was independent of socio-demographic factor. Similarly, according to

Adogun et al. 2015, on the knowledge of risk factors and practice of preventive measures among female primary school teachers in urban Anambra state, Nigeria, it was shown that there is a very poor knowledge of cervical cancer and its risk factors among the respondents. This finding was in contrast with a study conducted in Zimbabwe by Mukona et al. 2015 about knowledge of risk factors and practices linked to cervical cancer in women where the knowledge of the risk factors for cervical cancer among participants was high. Furthermore, it has been observed in a study by Fashanu et al. 2014 that there is apoor knowledge of risk factors.

5.1.3 Determinants of Utilization of Cervical Cancer Screening Methods

Generally, our results showed that the various methods of cervical cancer methods were underutilized such that the utilization of the various screening methods were below average leaving the least used of them to be HPV test while the most used was pap smear. According to our study, determinants of utilization of cervical cancer screening include age, marital status, length of practice and occupation.

The present study reports that there is a poor utilization of Pap smear despite the high level of knowledge of pap smear. This result is not surprising as a previous study on the determinants of cervical cancer screening among women in Embu county, kenya by Nthiga Anne murugi, 2014 also reported that the uptake of cervical cancer screening (pap smear) is low (25%) among women in Embu county. It was also observed in a study by Dim CC, 2009, in Enugu that all participants were aware of cervical cancer screening but only few of them (18%) had ever been screened using pap smear. The level of utilization in this study is lower compared to ours. However, According to a study done by Kabir et al. 2005 which investigated the awareness and practice of cervical cancer screening among female health professionals in Murtala Muhammed specialist hospital Kano It was found that less than a quarter of the respondents have had pap smear done previously. Therefore, there is a low uptake of cervical cancer screening despite the high knowledge and positive attitude towards it.

Furthermore, Ojiyi and dike in 2008 in a study on knowledge and practice of cervical cancer screening at the Imo state university teaching hospital, orlu found that only a fractional

percentage of the respondents had ever had a cervical cytology performed on them which supports our findings.

5.1.4 Investigating the Association between the Willingness to Screen for Cervical Cancer and the Determinants among Respondents

Our study depicted that age, marital status, Parity and occupation had significant effects on the willingness of respondents to undergo cervical cancer screening. In a study by Bansal et al. 2015, it was observed that attitude to screening is influenced by educational level and the practice of screening for cervical cancer depended on age, income and marital status which supports our study. Also, in a study done by Ezechi et al. (2013) to assess the willingness and acceptability of cervical cancer screening among HIV positive Nigerian women, it was found that number of living children had a significant effect on willingness which further reiterates our findings.

However, a study done by Chizoma et al. (2014) provided contrasting results to our findings, they stated that there was no significant association between willingness to use cervical cancer screening services and age.

5.2 Limitations

Most of the PHC facilities in Ibadan North LGA which happens to be the largest LGA in Ibadan metropolis were understaffed. Therefore, the researcher had to recruit private health workers in order to meet up with the minimum sample size.

5.3 Conclusion

The study assessed the level of knowledge, risk factors associated with cervical cancer and determinants and willingness to screen for cervical cancer among Primary Health Care workers in Ibadan North Local Government. The level of knowledge of primary health care workers on cervical cancer screening methods and risk factors associated with cervical cancer as evidence from this study was relatively high. However, the utilization of these screening methods was low. This study supports the fact that utilization of cervical cancer screening is low in Nigeria, even though the level of awareness is high. Regrettably, it is expected that health care workers should be at the fore front of utilizing these cervical cancer screening methods but the reverse is the case. Reasons for non-utilization of these screening methods included lack of time to screen, not feeling at risk of having cervical cancer and the screening method being expensive. A high percentage of the respondents were willing to screen for cervical cancer provided that they had adequate knowledge and understanding of cervical cancer screening; the screening would be free or pay at an affordable price; there would be mobile screening units and close proximity to screening location. Significant predictors that influenced the willingness to screen were parity and respondents' occupation. Nurses/midwives were 2.82 times more likely to be willing to screen for cervical cancer compared to doctors.

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5.4 Recommendations

To improve the rates of knowledge and willingness to screen for cervical cancer among health workers, we recommend that:

1. An intense public health sensitization program should be conducted on a recurring basis, improving cervical cancer literacy, paying special attention to its risk factors, causes and preventive methods.

2. Furthermore, public service announcements promoting Pap smear, cervical cytology, HPV testing and visual inspection with acetic acid test utilization and its benefits should be encouraged by the government and other non-governmental firms.

3. More so, policies that encourage health workers to be willing to know and utilize cervical cancer screening methods should be introduced. In addition, education on cervical cancer and its awareness should to be properly disseminated so that the information delivered is complete.

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INFORMED CONSENT FORM

Dear respondent,

My name is Oresesgun Adepeju Ayoola. I am a second year postgraduate student of the Department of Epidemiology and Medical Statistics, Faculty of Public Health, University of Ibadan, Ibadan, Oyo state. I am currently undertaking a study which focuses on willingness to screen for cervical cancer and the determinants among primary health care workers in Ibadan north local government area, Nigeria. This questionnaire is divided into four sections socio-demographic characteristics, knowledge and awareness of the different types cervical cancer screening, the determinants of utilization of cervical cancer screening services, the determinants of willingness to screen for cervical cancer among primary health care workers.

I admonish you to please answer all questions with complete sincerity, as you are assured that the information you will be providing in this questionnaire will be used mainly for this study and no third-party will have access to this data apart from the researcher. Your name will not be requested in the study.

However, this study is entirely voluntary and you are not at risk or any form of disadvantage if you do not want to participate. In order to be sure that you actually accepted to take part in this study voluntarily, please kindly sign or thumbprint on the space provided below. Thanks for giving your audience.

_____ _____

Date Signature/ thumbprint of respondent

Serial Number .....

Health care facility .....

INSTRUCTION: Please tick ( ) the appropriate box and fill in the blank spaces as it applies to you.

Personal Data

1. 1. Age as at last Birthday: _____
2. Marital status: 1). Single ( ) 2). Married ( ) 3). Divorced ( ) 4).Widow ( ) 5).Separated ( )
3. Occupation: 1). Doctor ( ) 2). Nurse/midwife 3). Ward maid 4). Lab. Technician
4. Length of practice: _____
5. Total number of children (living and dead): _____
6. Total number of miscarriage(s) or voluntary termination(s) of pregnancy: _____

Knowledge and awareness of the different types of cervical cancer screening.

1. Have you ever heard of cervical cancer? Yes ( ) No ( )

2.

Source of information:	**Yes**	**No**
From work		
public lecture		
Radio/ television		
News paper		

3. Cancer of the cervix is the commonest cancer of the female reproductive tract: Yes ( ) No ( ) Uncertain ( )
4. What is the real cause of cancer of the cervix? Unknown Sexual transmitted disease ( ), Old age ( ), HPV ( ), Bacteria ( ), multiple sexual partners ( ) others (specify) _____

5. In which age group does cancer of the cervix most commonly occur?

a. Below 30 years ( ) (b) 30–39 years ( ) (c) 40–49 years ( ) (d) 50 years and above 0

6. The following are risk factors of cervical cancer in later life.	Yes	No
a. Sexual intercourse before the age of 20 years		
b. Keeping many sexual partners		
c. Marriage to a man with other wives or sex partners		
d. Smoking		
e. HIV infection		
f. Multiple pregnancy		

7. Symptoms of cancer of the cervix include:	**Yes**	**No**
g. Offensive discharge		
h. Bleeding after sexual intercourse		
i. High fever		
j. Moderate pain during sexual intercourse		
k. Loss of appetite		
l. Weight loss		

8. Which of the following screening methods are you aware of?

Methods	YES	NO
a. Pap smear		
b. cervical cytology		
c. HPV test		

Utilization of each of the cervical cancer screening types

9. Which of the following screening methods have you used before?

Methods	YES	NO
a. Pap smear		
b. cervical cytology		
c. HPV test		
d. Visual inspection with acetic acid (VIA)		

10. How many times have you used these screening methods?

Methods	No of times
a. Pap smear	
b. cervical cytology	
c. HPV test	
d. Visual inspection with acetic acid (VIA)	

11.

	Yes	No
I have already undergone cervical cancer screening and I am not willing to repeat it		
I have already undergone cervical cancer screening and I am willing to do it again.		

12. If 'NO' to 9 (a-d), why have you not undergone screening? (please you may tick more than one)

a). It is expensive ( ) b). I am not aware of the test ( ) c). I don't know where it can be done ( ) d). I don't feel at risk of cervical cancer ( ) e). I don't have time ( ) f). Other reasons (Specify)

_____

13. I will not go for cervical cancer screening because:

	YES	NO
I do not have adequate information about cervical screening		
I am elderly		
I do not feel at risk		
I show no symptoms		
I am scared of the examination		
I am afraid of the outcome of the screening		
I am not interested in the screening		
I think the test will be unpleasant		

14. Willing to undergo cervical cancer screening? Yes ( ) or No ( )

Are you willing to screen if you have adequate knowledge and understanding of cervical cancer	Yes	No
Are you willing to screen (if free)		
Are you willing to pay for screening at an affordable price?		
Are you willing to screen if there are mobile screening units?		
Are you willing to screen if there is close proximity to screening location		

TELEGRAMS.....

TELEPHONE.....

MINISTRY OF HEALTH

DEPARTMENT OF PLANNING, RESEARCH & STATISTICS DIVISION

PRIVATE MAIL BAG NO. 5027, OYO STATE OF NIGERIA

Your Ref. No. .....

All communications should be addressed to

the Honorable Commissioner quoting

Our Ref. No. AD 13/ 479/ 171

November, 2016

The Principal Investigator,
Department of Epidemiology and Medical Statistics,
Faculty of Public Health,
College of Medicine
University of Ibadan,
Oyo State.

Attention: Oresegun Adepeju

ETHICAL APPROVAL FOR THE IMPLEMENTATION
OF YOUR RESEARCH PROPOSAL IN OYO STATE

This is to acknowledge that your Research Proposal titled: "Willingness to Screen For Cervical Cancer and the Determinants among Primary Health Care Workers in Ibadan North Local Government Area, Ibadan." has been reviewed by the Oyo State Ethical Review Committee.

2. The committee has noted your compliance. In the light of this, I am pleased to convey to you the full approval by the committee for the implementation of the Research Proposal in Oyo State, Nigeria.

3. Please note that the National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations, in line with this, the Committee will monitor closely and follow up the implementation of the research study. However, the Ministry of Health would like to have a copy of the results and conclusions of findings as this will help in policy making in the health sector.

4. Wishing you all the best.

Dr. Abbas Gbolahan
Director, Planning, Research & Statistics
Secretary, Oyo State, Research Ethical Review Committee

TELEGRAMS.....

TELEPHONE.....

MINISTRY OF HEALTH

DEPARTMENT OF PLANNING, RESEARCH & STATISTICS DIVISION

PRIVATE MAIL BAG NO. 5027, OYO STATE OF NIGERIA

Your Ref. No. .....

All communications should be addressed to

the Honorable Commissioner quoting

Our Ref. No. AD 13/ 479/ 271

November, 2016

The Principal Investigator,
Department of Epidemiology and Medical Statistics,
Faculty of Public Health,
College of Medicine
University of Ibadan,
Oyo State.

Attention: Oresegun Adepeju

ETHICAL APPROVAL FOR THE IMPLEMENTATION
OF YOUR RESEARCH PROPOSAL IN OYO STATE

This is to acknowledge that your Research Proposal titled: "Willingness to Screen For Cervical Cancer and the Determinants among Primary Health Care Workers in Ibadan North Local Government Area, Ibadan." has been reviewed by the Oyo State Ethical Review Committee.

2. The committee has noted your compliance. In the light of this, I am pleased to convey to you the full approval by the committee for the implementation of the Research Proposal in Oyo State, Nigeria.

3. Please note that the National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations, in line with this, the Committee will monitor closely and follow up the implementation of the research study. However, the Ministry of Health would like to have a copy of the results and conclusions of findings as this will help in policy making in the health sector.

4. Wishing you all the best.

Dr. Abbas Gbolahan
Director, Planning, Research & Statistics
Secretary, Oyo State, Research Ethical Review Committee